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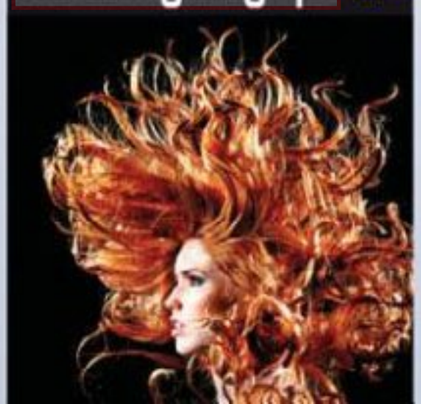
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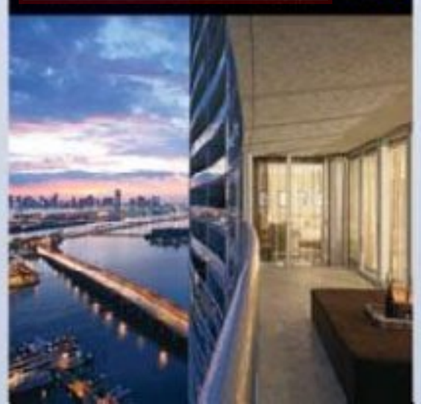
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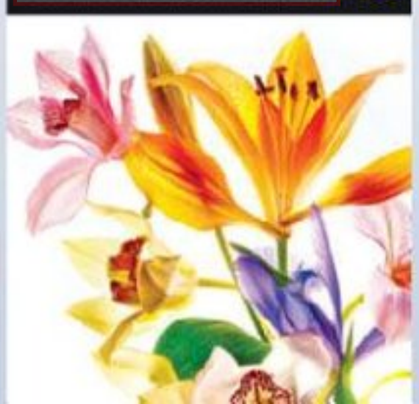
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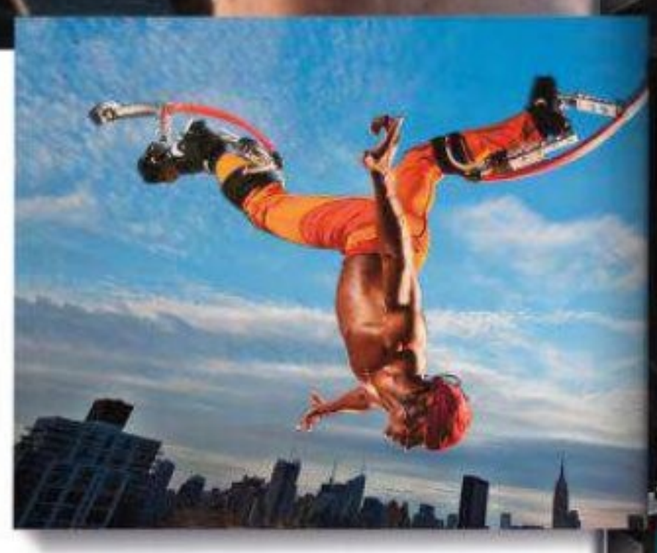

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EDITOR'S LETTER

What Camera Should I Buy?

I often get asked—by readers, by friends, and even, recently, by my sister—which camera I own. One reader suggested that our tests include a disclosure of the author's own holdings. I understand the question, since we all want critics to put their money where their mouth is—and to let us judge their tastes (and prejudices) by their possessions.

The thing is: I don't own a current-model digital camera, and neither does Philip Ryan or Dan Richards, who write and edit our camera tests. The same goes for Julia Silber and Peter Kolonia, who collaborate on our lens tests.

One of the many perks of working for the leading photographic publication is that we get to borrow all of the cameras and lenses that we test and review. (The drawback, of course, is that we must give them back—often much sooner than we'd like!) Some of this gear, chiefly the camera bodies and prime lenses that we use in every test for consistency over time, never leaves the Popular Photography Test Lab. But we all try to acquaint ourselves with every piece of equipment that comes in for review, regardless of who performs the actual assessment that you read in the magazine and online. And we keep stuff for as long as we can after publishing the test report to give all of the editors a chance to use it.

Whenever we review equipment, we try to focus on those features we think photographers care most about, and to make our personal likes and dislikes clear. For all of our reliance on consistent, measurable performance testing, those assumptions and preferences matter—both to us and to you.

That's what makes it so hard to choose our favorite gear for our annual POP Awards for Photography's Outstanding Products (page 71). The process takes months: We go back over old notes, reread our reviews, debate our opinions, draw up a list, and then argue it all over again. We identify interesting accessories that we still need to try—and use them in the field before adding them to the roster. And we continue to fine-tune our list, trimming out the weaker nominees and championing the ones we can't live without, until the last possible minute.

Next month, the debate continues as we choose our 2012 Camera of the Year. I can't even tell you yet which models are in the running—give us your suggestions at PopPhoto.com/camera-of-the-year-2012.

As for what cameras my colleagues and I own, many of them are older than we are. You can check out our classic (and not-so-classic) prized cameras by following us on Instagram: @PopPhotoMag.

Miriam Leuchter

NEWSSTAND Nikon brings full-frame performance to a wider market with the $2,100 (body only) D600, photographed by Travis Rathbone. Full test: page 87.

SUBSCRIBER Celebrate our 2012 POP Awards for Photography's Outstanding Products on page 71. Photographer Travis Rathbone created a festive spirit.

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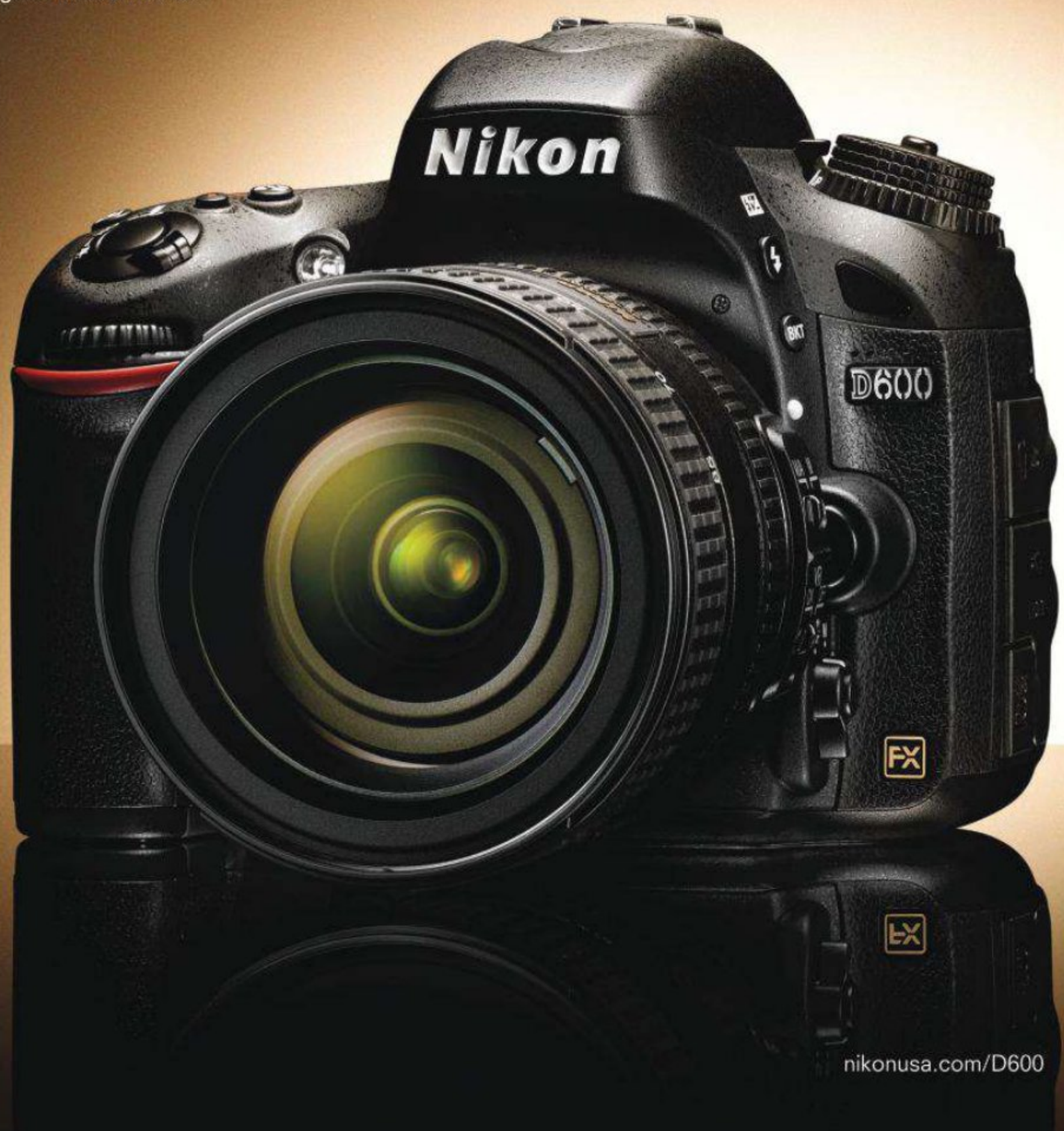

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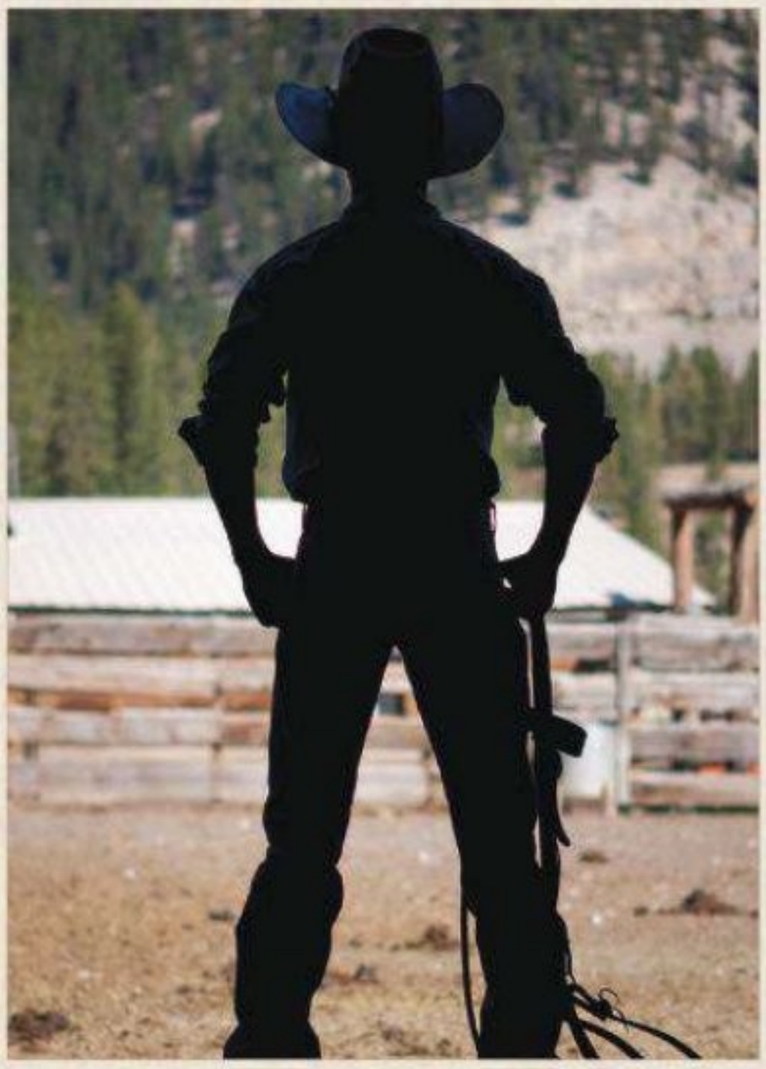

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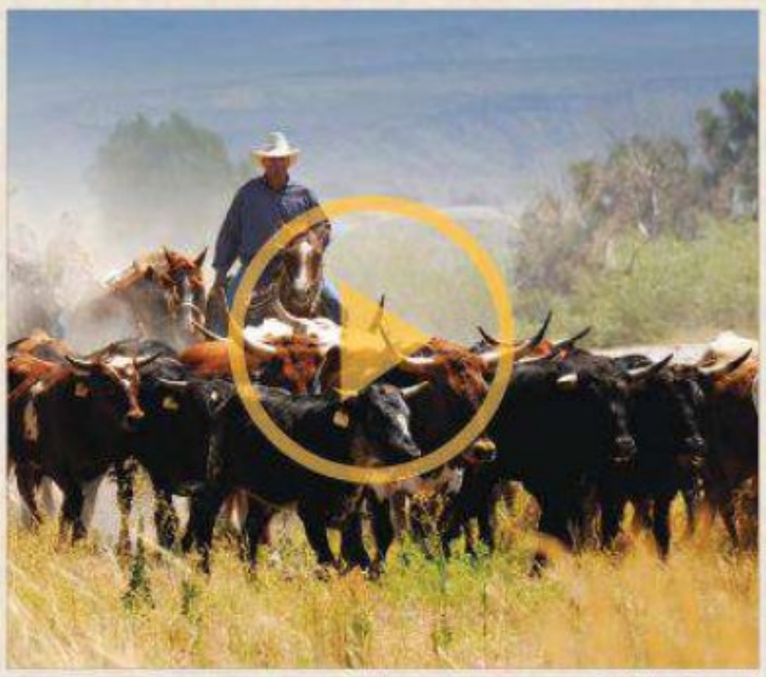

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We will dive right into the action at a local dude ranch where the spirit of Utah's rugged history is alive and well. With photos ops around every bend, you will quickly sharpen your newfound multimedia talent while expanding your photography know-how. Tackle lively shots of real cowboys in their everyday tasks of branding, lassoing, and wrangling, then slow down the pace by framing introspective portraits or panning out on the gorgeous natural backdrop. As the sun descends, convey new moods and experiment with the interplay of light and shadow as they dance across barns, fields, and horses.

Add a dash of frenzied beauty to your photos as we capture the thrill of an authentic cattle drive. This event will be a prime opportunity to use your camera as a filming tool. Later on, you will learn how to interpret and edit your video clips to tell an impactful and visually interesting story.

No trek to Utah would be complete without taking in an eyeful (or several) of its spectacular displays of geological wonder. At **Bryce Canyon**, fill your frame with its vast stadiums of warmly colored carved limestone, known as "hoodoos," created from centuries of erosion. These subjects become even more photogenic as we continue to change perspective and journey along such hotspot vistas as **Queens Garden Trail**, **Inspiration Point**, **Navajo Loop Trail**, and **Fairyland Point**. Press the shutter as the sunset ignites the Canyon, and highlights unseen faces of this elegantly timeworn giant.

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ATLAS PEEKED Dan Bracaglia lay flat on his back and pointed Nikon's new 24–85mm f/3.5–4.5G AF-S ED VR full-frame lens straight up at the Unisphere in Flushing, NY. With the zoom racked out to 85mm on a Nikon D700, our assistant online editor made an exposure of 1/500 sec at f/5.6, ISO 400. Later, he slightly increased the clarity and vibrance in Adobe Photoshop Lightroom 3. For our full lab and field test of this zoom, see page 100.

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35 COMPACT

Sony puts full-frame imaging in your pocket

EVER WONDER why camera makers haven't made compact cameras with full-frame sensors? In addition to the expense of those large sensors, there is the daunting challenge of making a full-frame lens that won't dwarf the camera.

For the new Sony Cyber-shot RX1, this took the form of the 24.3MP sensor and the BIONZ processor from Sony's innovative Alpha 99 DSLR, making the RX1 the first compact camera to offer 14-bit RAW capture.

For the lens part of the equation, Sony engineers devised a fixed, prime optic that resides in good part within the camera—extending nearly to the back of the body. The 35mm f/2 Carl Zeiss T* lens sports both focusing and aperture rings.

The RX1 will also capture 1920x1080 HD video at up to 60 progressive frames per second. There's a built-in pop-up flash, but no built-in EVF. You'll need to frame with the 3-inch, 1.23-million-dot LCD, or add Sony's lauded OLED EVF through the new Multi-Interface shoe atop the camera.

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We challenged our readers to ask us questions that will better help them advance their skill and creativity

Q. What's the best Canon DSLR that is 14 megapixels (MP) or higher for someone on a budget?

A. The least expensive current Canon DSLR that meets your specs is the Canon EOS Rebel T3i. However, for only about $80 more (street price) you can get the new EOS Rebel T4i, which has the latest DIGIC 5 image processor, a 3.0-inch Clear View Vari-Angle Touch Screen LCD, a 5.0 fps burst rate, a 9-point all-cross-sensor AF system, and Continuous AF when shooting video. They're both great cameras, but the T4i is the better value in our opinion.

Q. What is back button focus and why would I want to use it over the plain standard shutter button setup?

A. Back button focus is a camera setting in the shooting menu that allows you to autofocus by pressing a button on the back of the EOS Rebel T4i instead of using the shutter button. Many pros prefer to separate the focusing and shooting functions by selecting back button focus because it gives them more control, and makes it less likely to fire the shutter accidentally. Which system works best for you is really a matter of personal taste and what kinds of subjects you shoot.

Q. What is the best 1st SLR camera to get?

A. Broad-spectrum entry-level DSLRs such as the Canon EOS Rebel T3i and T4i are by far the most popular models bought by first time DSLR buyers because provide a full feature set, high performance and excellent image quality at affordable prices. They're also great cameras to grow with. However if you're a mountain climber, skier, white water rafter, etc., you might be better off with a more rugged bodied DSLR able to withstand rough use. The Canon EOS 7D with its sealed, weather resistant, magnesium alloy body is a great choice even for a faster camera 8 fps and 19-point cross-type.

Q. When shooting in mostly darkness for stars, sunrise, sunset, what would be the most suitable white balance choice?

A. Daylight color balance or AWB (auto white balance) are generally the best settings to start with. If you try to "correct" a sunset you'll often get something that doesn't look like what you saw. Try the Tungsten setting if you want a night sky to look extra deep blue, or "Cloudy" if you want to warm things up. Many creative photographers experiment with the white balance settings just to see what they get. It's a lot of fun, and a great way to learn about what works best for you.

EOS Rebel T4i with EF-S 18-135mm f/3.5-5.6 IS STM Lens

EOS Rebel T4i

EOS 7D with EF-S 18-135mm f/3.5-5.6 IS STM Lens

EOS Rebel T4i with EF-S 18-135mm f/3.5-5.6 IS STM Lens.
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EF 70-300mm f/4-5.6L IS USM Telephoto Zoom Lens,
EF-S 15-85mm f/3.5-5.6 IS USM Lens,
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NEXT * JUST OUT

BIG BOY

The ILC video king gets tougher—and brawnier

PANASONIC'S Lumix GH2 is prized by videographers, not least for a firmware hack that boosted ISO performance and HD video quality with an absurdly high bit rate. So with the GH3, its latest flagship interchangeable lens compact, Panasonic baked the video boost into the stock firmware—providing an extended ISO of 25,600 (12,800 in the normal range) and 1920x1080p video bit rates up to 72Mbps.

Panasonic Lumix GH3
$1,299, body only, street
shop.panasonic.com

One of the largest ILCs on the market, the GH3 weighs in at a hefty 16.6 ounces—without a lens attached.

The GH3's bigger, heavier, magnesium-alloy body is dust- and weather-sealed, as is a new 35–100mm f/2.8 OIS lens (equivalent to the classic 70–200mm focal range). Built-in Wi-Fi lets you transfer photos wirelessly to your computer or the Lumix Club service to facilitate backup to the cloud and posting to social networks.

One unwelcome addition? A $400 price jump—the GH2 cost $899 when it launched in 2010.

SHINE THE LIGHT

"Ultra Macro" ILC lens promises 4X to 5X magnification

WHEN SHOOTING at magnifications higher than 1:1, you typically need expensive and complicated equipment and lighting. Enter the Yasuhara Nanoha x5, a quirky ILC lens that offers up to 5:1 magnification.

Available in Micro Four Thirds and Sony E mounts, the lens has 10 glass elements arranged in seven groups. A removeable lighting module holds three USB-powered LEDs—a necessity, considering the lens' slow f/11 maximum aperture. An included USB battery pack is powered by two AAs, or you can simply plug into a computer. Included plastic holders allow you to hold your subjects in place directly in front of the lens.

Yasuhara Nanoha x5
$500, street
internationalsupplies.com

NEWS FEED

> Climb lampposts no more! The Tree-pod, a ladder-like tripod from Fishbone, allows you to snap pics from 11 feet off the ground.

INSIDE TECH

Close Up

With a magnification range of 4:1 to 5:1, the Nanoha x5's depth of field is tiny—even in its limited aperture range of f/11–32 it produces an exaggerated, rectangular *bokeh*. It requires precise camera placement; the 8–11mm focal range is so small you'll likely need to adjust the magnification ring between 4X and 5X to focus.

WIDE EYE

Sigma launches new lens lines with a fast, wide prime

THIS SPEEDY 35mm is the first lens to be released under Sigma's new classification that designates lenses conceptually as either "Art," "Contemporary," or "Sports" (though they're not limited to these uses).

The full-frame 35mm f/1.4 Art lens is comprised of 13 elements in 11 groups, with a minimum focusing distance of about a foot. The rounded nine-blade diaphragm has a minimum aperture of f/16, reflected in the comically limited markings for depth of field on the distance scale.

It sports a brass bayonet mount, and the outsized focusing ring is adorned with a rubberized grip. An optional USB dock lets you plug lenses into your PC, enabling you to use Sigma's Optimization Pro software to update firmware and adjust its focus parameters.

Sigma 35mm f/1.4 "Art" lens
Price not yet announced
www.sigma-global.com

VERY NICE ZEISS

German lensmaker debuts fast, gorgeous tele

LEGENDARY lensmaker Carl Zeiss has been steadily releasing lustworthy manual-focus primes aimed at video shooters, and this 135mm f/2 appears to be no different.

The apochromatic design uses special low-dispersion glass elements to minimize chromatic aberration, and the T* anti-reflective coating combined with a lacquer treatment on the elements' edges help resist reflections and stray light.

The all-metal barrel is sure to be sturdy (if not weather-resistant), and a 268° rotation angle should allow for extremely precise focusing. A nonrotating filter ring allows the use of polarizers and such.

Zeiss 135mm f/2 Apo T*
$2,122, list
lenses.zeiss.com

NEWS FEED

> Transform your photos into comics with the free iPhone-only app, Manga-Camera. The app features more than 20 frame and filter options and connects to social media platforms for easy sharing.

> Some 605 signed Ansel Adams prints from the 1968 UC Berkeley centennial turned up in the university's Bancroft Library, where fifty of the previously unseen photos are now on display.

> Sony invested $645 million into Olympus, pumping life into a company mired in financial woes. The fiscal life preserver could mean Sony sensors in Olympus bodies, or Olympus lenses on Sony bodies.

> Back up your photos faster than ever (up to 380MB/s) with LaCie's new Rugged USB 3.0 Thunderbolt Series hard drives.

Color for Newbies

Calibration made easy

While color-profiling your monitor can be both a delicate and daunting task, it's crucial to getting the most out of your images. With the ColorMunki Smile ($99, street; xritephoto.com), X-rite hopes to take the scary out of color science, distilling its profiling technology into a stripped-down software wizard for novices. Automatically detecting multiple monitors, the software uses digital animations to guide you through automatic calibration of LED and LCD displays.

THE LOWDOWN

OUT WITH THE NEW

Rather than pursue the new XQD format, SanDisk announced that it will develop memory cards based on the new CFast 2.0 standard. This uses the existing SATA-III interface, theoretically limiting data throughput to 600MB/sec, much slower than XQD's 1000MB/sec limit. Still, SanDisk says such cards will be fast enough to record 4K video at 30 fps.

RING THING

RING LIGHTS come in two varieties: macro and general purpose. Their on-axis output creates an almost shadow-free image—desirable for portraits and products—and the majority are flashes. But recently, cool-operating, continuous-source LED ring lights have grown in number, allowing videographers to get that groovy ring-lit look, too.

Polaroid LED Macro Ring Light $80

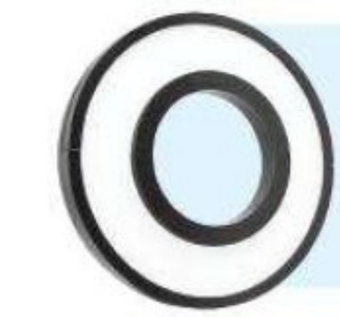
The 5.2-ounce close-up light threads directly onto lenses with diameters from 49mm to 67mm. It operates at full or half power on two AA batteries (or from AC current), and has 48 LED lamps, considerably more light than most ringers at this price point.

Bower SFD-RL71 LED Ring Light $107

This small macro light uses 16 LED lamps and attaches directly to a the filter threads on the lens. Its most distinctive features are its weight—only 3.2 oz—and a built-in, rechargeable lithium-ion battery with a three-stage power indicator.

Rotolight RL48 $199

A variation on the ring light, the Rotolight is designed to slide not around a lens, but onto a shotgun mic bracket for video. Its 48 LED lamps, with a claimed output comparable to an 80-watt tungsten bulb, are powered by three AA batteries for up to four hours.



Rosco LitePad Loop $699

Adaptable to most cameras, this relatively light (2.4 lbs) creative tool attaches to its camera bracket using magnets. Appealing to portraitists is its set of accessory masks—also held in place by magnets—that produce freaky catchlights in a subject's eyes. AC or DC power.

Omicron OM3 Ring Light $792

While not a flash, Quantum Instrument's LED light can mimic a TTL-controlled flash when used with Quantum's CoPilot flash controller. Set a flash sync speed—say, 1/250 sec—and the OM3 pops for that duration in sync with the shutter. It's also a continuous video light. Requires the additional purchase of a Quantum Turbo or Blade battery.

NEWS FEED

> Blurb—the maker of BookSmart and Bookify—has released an eponymous app that allows photographers to create print books and interactive ebooks in just a few easy steps.

> More bad news for Kodak fans (and home printers): The beleaguered company has announced that, starting in 2013, it will no longer produce consumer inkjet printers.

> Conceptual photographer Uta Barth and documentary photographer An-My Lê were each awarded 2012 MacArthur Fellowships (a.k.a. "genius grants"), a $500,000 prize from the MacArthur Foundation.

> After an exhaustive investigation, documentary filmmaker Errol Morris (*The Thin Blue Line*) concluded that the famous 1855 Crimean war photo "Valley of the Shadow of Death" was staged.

TOOLBOX

DO-IT-ALL

Is this the all-in-one printer you've been waiting for?

ALL-IN-ONES are the jack-of-all-trades of printers, capable of scanning, faxing, copying and printing—typically mastering none. Epson hopes to change that with its new Expression Photo XP-850 ($300, list; www.epson.com), packing a six-color, dye-based photo printer into an all-in-one package. Epson claims prints (made with Claria Photo HD Ink) last 300 years.

This sleek-looking box sports a motorized control panel and output tray that opens automatically before printing. A 3.5-inch touchscreen facilitates automatic Wi-Fi setup, for access to Epson Connect services such as Remote Print Driver and Scan-to-Cloud.

20 MB

$1,000 SanDisk solid state drive, 1991

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$1,000 SanDisk Extreme Pro CF card, 2012

SOURCE: SanDisk

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ALL THE WAY LIVE

Leica revamps its classic rangefinder

READY OR NOT, video is coming to Leica rangefinders. Dropping the CCD chips of the new Leica M's digital predecessors in favor of a 24MP CMOS sensor, the German camera maker embraces the idea of a live-view finder and 1920x1080p video capture.

The new Leica M—no more numerical model designation—maintains the line's classic design, brass top and base plates, and one-piece magnesium-alloy body. But it adds long overdue dust- and weather-sealed gaskets and some cosmetic changes. It is slightly heavier, taller, and thicker than the M9, sports a new, raised thumb grip, and its 3-inch LCD panel is covered by Corning's ubiquitous Gorilla Glass—an upgrade from the sapphire crystal that covers the M9's 2.5-inch LCD.

A new button on the back is dedicated to live view. The larger body may have been necessary to squeeze in Leica's Maestro processor, borrowed from its S-line of medium-format tanks. The M pushes 48MB uncompressed DNG files at up to 3 frames per second, or 1 fps more than its predecessor. Its top sensitivity climbs to ISO 6400 from just ISO 2500, and even the lithium-ion battery is new.

Each component of the camera is manufactured in-house under the supervision of Leica's engineers—one reason the body alone will carry a street price of $7,000 (estimated).

Leica values simplicity; there is still no autofocus or image stabilization system on the M. And despite the addition of live view, the camera retains Leica's bright-line optical viewfinder for eye-level viewing when shooting either stills or video.

Leica hasn't completely abandoned the CCD; for evidence, see the new M-E, a stripped-down model with the M9's 18MP sensor. It loses the USB port, frame line selector lever, and about $1,500 from its street price.

A new (optional) R-Adapter M ($310, street) allows you to use glass from Leica's discontinued R line of 35mm SLRs—tossing a life raft to collectors of R-series lenses left out in the cold in 2009, when Leica abandoned the R in favor of the medium-format S line.

And with the new (optional) 1.4-million-dot Visoflex EVF-2 electronic viewfinder, Leica in effect breathed life into the discontinued lenses while declaring its old R bodies obsolete, saying, "In combination with the R-Adapter M, R-Lenses, and the viewfinder, the Leica M can be used independently from its monitor in the same way as an SLR camera."

But the M isn't an SLR. It's still a second-to-none rangefinder, designed to provide a no-frills, fully manual shooting experience at a stratospheric retail price. We can't wait to put it through the wringer in the Popular Photography Test Lab. ***—Matthew Ismael Ruiz***

DAN BRACAGLIA (LCD IMAGE)

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SIGMA

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1 Among interchangeable-lens digital cameras with a full-frame image sensor (as of September 12, 2012) according to Sony's internal survey. © 2012 Sony Electronics Inc. All rights reserved. Reproduction in whole or in part without written permission is prohibited. Sony and the Sony make.believe logo are trademarks of Sony.

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PHOTO CHALLENGE

BRENT SHUMAKER

POPPHOTO.COM

OVER THERE

An Air Force veteran recreates the dread of deployment

AS AN AIRMAN in the U.S. Air Force in the early aughts, Brent Shumaker, now 30 and working as a logistics coordinator, watched plenty of buddies get deployed. So conceiving the stoic struggle of these servicemen and the families they left behind was easy—he even had all the props. Harder was capturing this solemn self-portrait *sans* studio or stand-in.

Having backed all the cars out of his garage in Spring, TX, he closed the garage door and hid it behind a black drop cloth. "I figured the cement floors could give the impression of a hanger floor," Shumaker says. Armed with a wireless trigger, he marched back and forth to check his tripod-mounted Canon EOS Rebel T3's LCD between takes to make adjustments.

Lighting? A 60W incandescent overhead and a 125W compact fluorescent pointed up at his face. Setting his Sigma 17–70mm f/2.8–4 zoom to 50mm, he exposured for 1/5 sec at f/4 and ISO 400. He edited the image, blurring his dog tags, in Adobe Photoshop Lightroom 4.

And by winning our photo challenge for expressive self-portraits, Shumaker showed us all who he is. *—Matthew Ismael Ruiz*

NEXT PHOTO CHALLENGE

In Tech Talk (page 34), we detail how to use flash outdoors as fill light. Try your hand at using flash to balance or augment sunlight, and you could earn $100 and your photo and story here. Read all the rules at PopPhoto.com/contests.

Raw Emulsion

Matthew Brandt's prints take a bath

AFTER MOVING to Los Angeles from New York in 2006 to earn an MFA at UCLA, Matthew Brandt found himself most inspired to play around in the darkroom. "I'd had this New York repression of space, so I went a bit wild with the printing space," the 30-year-old photographer explains.

His love for the magic of photo chemistry inspired him to explore salt-paper printing, a 19th-century technique that involves coating paper in a salt solution before printing. One day, after shooting large-format images of the ocean, he replaced the salt solution with ocean water. Photographing a nearby lake, he wondered whether he could incorporate lake water into his process in a different way: After making a standard 16x20 color print, he dumped the image

MATTHEW BRANDT (7)

See more of Brandt's "Lakes & Reservoirs" at matthew brandt.com.

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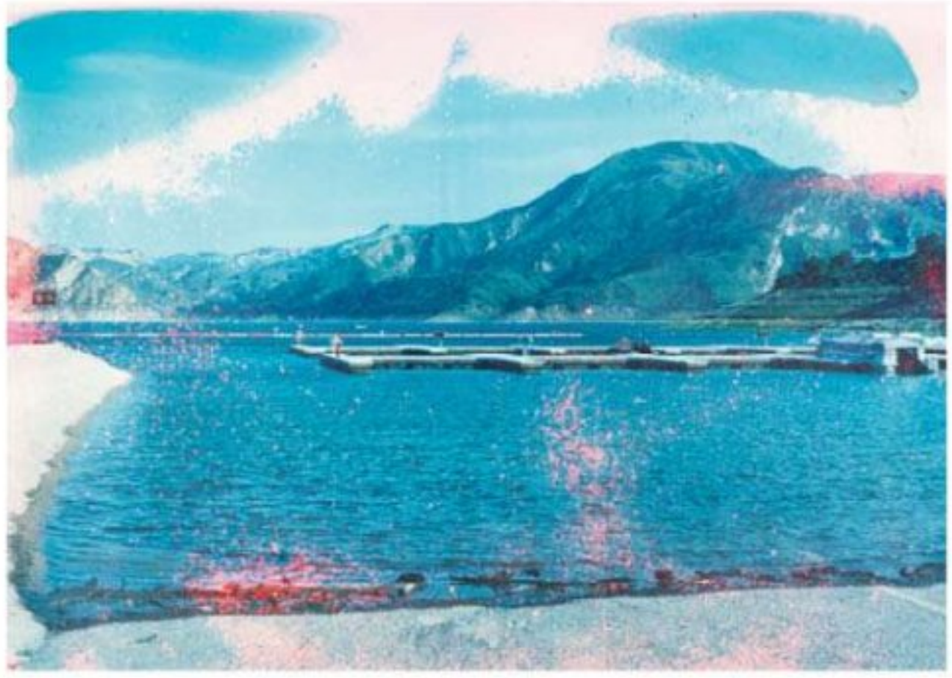

To narrow the list of potential subjects, Brandt chose the bodies of water with the most compelling names, such as Loveland Reservoir, Big Bear Lake, and Lake Matthews.

into a tray full of collected lake water, letting it sit for days.

The results were both unexpected and intruiguing. "Lake water breaks down the color emulsion," Brandt says. "And there's a lot of uncontrolled gesture, with different results from pulling prints out of the tray in different ways."

He began hunting for more local lakes and reservoirs, bringing along his 4x5 Cambo, Kodak Portra 160NC film, and 5-gallon jugs. Later, at the UCLA studio, he'd print on every type of paper he could find, leaving 16x20 and larger prints in the water bath for anywhere from a few days to a few months.

As the project grew, Brandt began experimenting with digital, taking panoramas with his Canon EOS 5D Mark II and stitching them together in Adobe Photoshop to make prints up to 6 feet tall. After sending his files to a local printer, he immersed the inkjet prints in a lake bath he had set up in his studio.

The resulting series, "Lakes & Reservoirs," was shown recently at Yossi Milo Gallery in New York. But he is still experimenting—lately, with images and water from waterfalls.

What fascinates him most is the process. "I like the idea of making and breaking—capturing the best possible image and knowing that it will be degraded," Brandt says. ***—Lori Fredrickson***

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In the Clouds

Shooting skydivers at terminal velocity

What came first: flying or shooting? I started working with photography when I was 14, and I first started skydiving on my 19th birthday. I thought my first jump would be a one-time thing, but once I'd landed, I knew this was going to be part of my life. The aerial perspectives are a photographer's dream, so I knew I wanted to shoot it. By my 24th jump, I had a camera mounted to my helmet.

What kind of work have you done professionally since then? I've done photography on editorial shoots for various clients. I mainly do cinematography and have shot for feature films, television productions, and international sporting events such as the Olympics. I've also produced several skydiving features.

What kind of gear do you need? It varies, depending on the shoot, but on most jumps I'll have four cameras helmet-mounted. One is a video camera for playback; one is a movie camera [RED or 35mm film], and I'll have two still cameras. These have ranged from a Hasselblad 6x6 to a Canon EOS 5D Mark III, with wide-angle and fisheye lenses. The heaviest camera I've had mounted was a 32-pound film camera on the set of *Cliffhanger*. I use custom cable releases, with a switch that lets me fire the trigger with my tongue.

How much freedom do you have to compose your shots? Speed has a lot to do with it. If someone jumps before me, or if I'm capturing a team, I'll accelerate to catch up with them, or decelerate if I'm the one who jumps first. But once I'm there, I respond to instant information: what the people are doing, where the clouds are positioned, and how it fits into three-dimensional space.

What's tricky about shooting in the air? You only have one minute to shoot. You have to anticipate lighting, cloud cover, and make sure that your settings are intact before jumping. But when you're actually shooting, you almost have to live in the future to anticipate shots. If someone's coming at you from 20 feet away, you'll want to shoot at a 5-fps burst rate. You get a better shot if you're prepared and wait until the moment is happening. I go into a dream world, and don't know what I've captured until I've landed.

How do you deal with the fear? You learn to embrace it. You accept the fact that you might die but don't want to, and you make sure to have both your survival and camera gear prepared for the moment. Once I'm at the ready state, waiting for a jump with people lined up behind me, my mind clears out and I go into automatic.

What are things you have to do in the air to get the shot? Positioning and having spacial proximity to your subject is key. I'll go on shoots where I jump first, and I'm accelerating faster than my subject, or I'll be photographing group jumps with faster acceleration, and have to adjust my speed to fly up or down.

What was your craziest experience in the air? It feels crazy right before you shoot: A green light goes on, you're hanging outside a plane watching other aircraft get into formation, and the next minute you're dropping though gravity in a camera-focused dream state. But one highlight was the opening ceremony of the Summer Olympics in Seoul, 1988. There was a lot of danger in landing at the stadium, so training was a long road. But on the day it happened, everything aligned itself to happen perfectly. I was up in the air, shooting stills and also live transmission to an international audience. The world was watching what I captured as I dropped through free fall: That was a crazy experience.

—Interviewed by Lori Fredrickson

Norman Kent has performed and photographed close to 23,000 skydiving jumps. The 56-year-old credits this with shaping his other photo work: "It's like having extra muscle or attention span when you're on the ground," Kent says. See more work at PopPhoto.com/Kent and normankent.com.

BRIAN FESTI

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Grave Ideas

After reading "Plot Shots" (Traveling Photographer, August 2012), I wanted to share my cemetery experience. While shooting headstones at Oakwood Cemetery in Waco, TX, I was approached by a cemetery administrator. He told me that since the grounds were private, I could run into legal problems if I published any photographs of easily identifiable graves, and that I might need written permission from the families. **David Whitten**
Waco, TX

IN THE September 2012 issue (Tech Talk, "RAW Menu" Q&A), a reader asked about a good HDR program that would process a single RAW file, and you replied with "No program will do what you want." I've been using MediaChance's Dynamic Photo HDR software for several years, and it does a nice job processing single RAW images—so much so that I rarely shoot multiples anymore.

Mark L. Mallard
Butte, MT

THERE IS an excellent photograph of a runner in a recent Showcase (October 2012). This photo was made using a Canon EOS Rebel T4i using a Canon 70–200mm f/2.8L EF lens. I have read that the AF systems in most entry-level DSLR cameras have spotty performance focusing with f/2.8 and faster lenses. Was this photograph made with a T4i "as received," without specifically calibrating it for the particular lens? **Lee Shelton**
Greenville, SC

EDITOR'S NOTE: *We bought the T4i we tested at retail, and we did not calibrate it for the lens. Philip Ryan made the shot with an off-center autofocus point selected and continuous AF tracking on. But you're right—AF systems on entry-level DSLRs aren't as robust as those on high-end models, and there may be less consistency in lower light.*

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Flashy Autos

TTL AUTOFLASH is a brilliant technology that's remarkably simple in concept. The flash fires and its light strikes your subject, then bounces back to go through the lens (the "TTL" part). A sensor in the camera reads the bounce-back and cuts out the flash when sufficient light is received for proper exposure. (On many TTL flashes, the exposure is determined by preflash, but this uses the same principle.)

In the meantime, the camera body is doing other tasks and may actually be working at cross purposes to the picture you want to get. Simply put, the more automation in the exposure mode, the more it restricts your choices with flash.

Here's how different exposure modes work with flash, in order of most restrictive to least. Your camera may work somewhat differently (check that manual!), but these are pretty typical for current and recent DSLRs.

● **AUTO (OR GREEN ZONE).** Totally automatic exposure control with no allowances for overrides such as exposure or flash compensation, and often, not even ISO. It decides when to pop up the flash and when to suppress it. It blocks shutter speeds lower than 1/60 sec or thereabouts, so forget about balancing flash with a low-light ambient exposure.

Would you think that this photo was made with a DSLR and single electronic flash, both in automatic modes, if we hadn't told you? See text for the full rundown on the shot.

STAN HORACZEK

Pluses: None, unless you like the flash snapshot look.

Pitfalls: Everything.

● **PROGRAM.** A huge boost in the available intervention: You can set ISO, exposure compensation and/or flash compensation, and when to use or not use flash. Plus, you can shift the program to

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get different combinations of shutter and aperture.

Pluses: This is a good walking-around mode to use when you want to be ready for a grab shot but still have control for more deliberate shooting.

Pitfalls: Sets a floor for shutter speed, usually around 1/60 sec, though you can often override this in custom functions or other menu settings. If you shift the program to get a different shutter speed or aperture, it will revert to the camera setting after one shot.

● **SHUTTER-PRIORITY.** You set the shutter speed; the camera sets the appropriate aperture. With flash, the camera will not allow you to set a shutter speed faster than the top flash sync speed.

Pluses: Lets you choose shutter speeds for specific effects, such as a slow speed with flash for a ghosting effect, or reasonably fast speeds to prevent blur.

Pitfalls: At very slow shutter speeds, you may get small apertures that will seriously limit flash range.

● **APERTURE-PRIORITY.** You set the aperture, the camera sets the appropriate shutter speed. Again, the camera will prevent a shutter speed faster than permissible sync speed.

Pluses: Lets you manipulate depth of field—large apertures for shallow, small apertures for deep. With flash, it lets you set a large aperture to max out the range of the flash.

Pitfalls: A very small aperture may greatly limit the flash range.

● **MANUAL EXPOSURE.** Lets you set an ambient exposure entirely independently of the flash, with one exception: It prevents your setting a shutter speed faster than the permissible sync speed.

Pluses: Manual exposure with autoflash is popular with pros and enthusiasts because it lets you set exactly the exposure you want, then forget it to concentrate on flash settings—to worry about just one variable.

Pitfalls: If you're in changeable light, you'll be fiddling with camera settings often.

In the photo at left, Stan Horaczek, our online editor, set a shutter speed of 1/250 sec with his DSLR in shutter-priority auto, both to prevent flash ghosting in his fidgety subject and to force a fairly large aperture—in this case, his telezoom's max, f/2.8. This in turn limited depth of field to blur out the background.

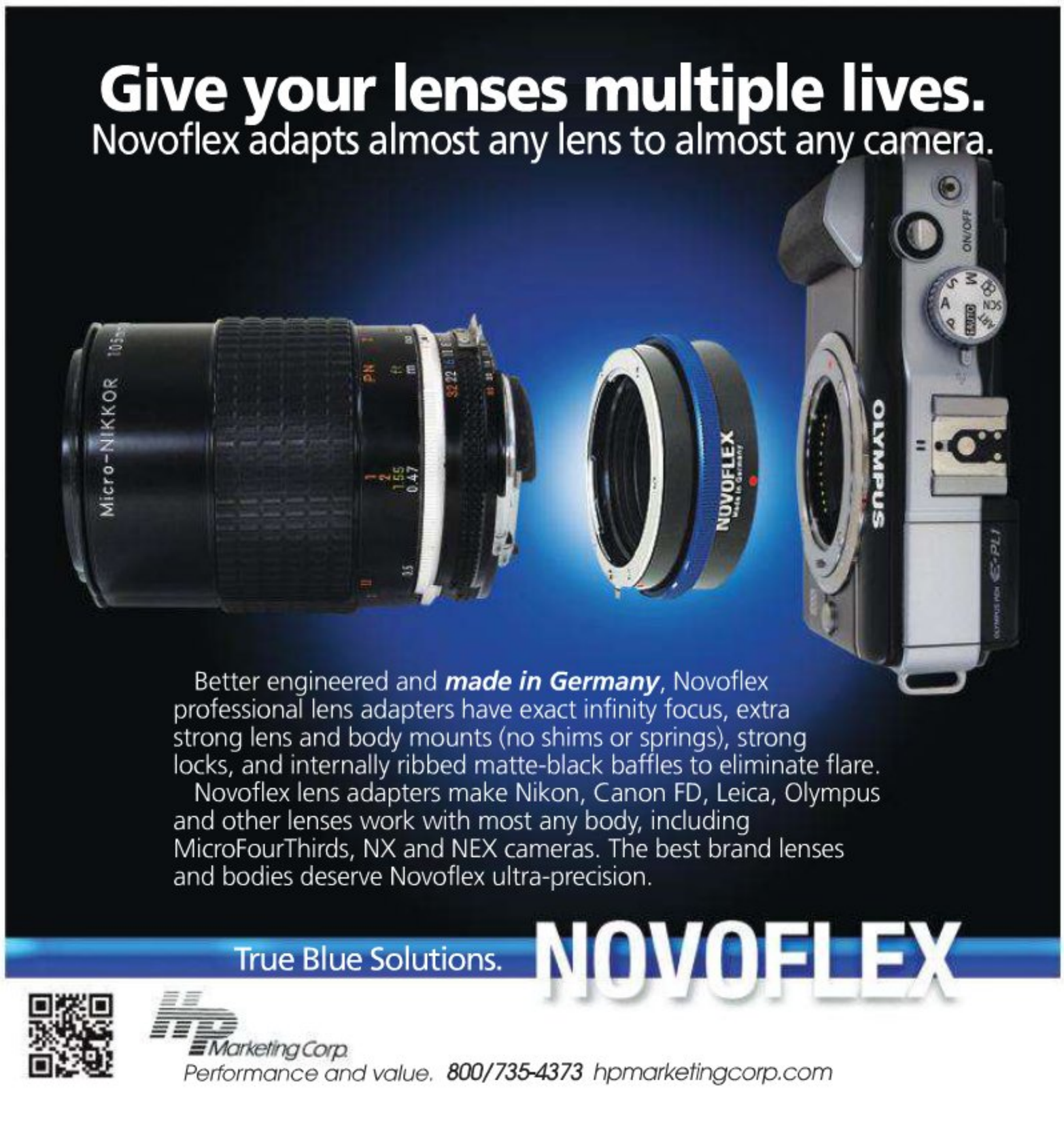
Horaczek used a single dedicated TTL autoflash off the camera, firing through a white shoot-through umbrella; flash output was set to +0.7 EV to make his son's face stand out from the strong backlight.

Q&A Full Frameup

Q I have a Nikon D300 and, while waiting for its successor, I'm watching Nikon roll out new full-frame cameras (D800, D600) and wondering if I'm missing something by having an APS-C body and lens. Other than the different magnification, is there any real advantage to full frame? I've had friends tell me "the images are so much better." Really?

Eric Schurr
Carlisle, MA

A *Comparing APS-C cameras to full-framers is like kumquats to pomegranates. The only valid comparison is of two cameras with the same maker, generation, pixel count, and price. The only pair to meet these criteria: the full-frame Nikon D700 and APS-C D300s, both 12MP cameras introduced in 2008 and 2009, respectively. In our tests, they were virtually tied in image quality through ISO 800. At higher ISOs, the D700's larger pixels made for visibly less noise. That's usually how it goes: APS-C cameras can compete well with full-framers in low to mid ISOs. We suspect that a successor to the D300s is not far down the road. And if Nikon's recent DSLRs are any indication, it will be a substantial upgrade.*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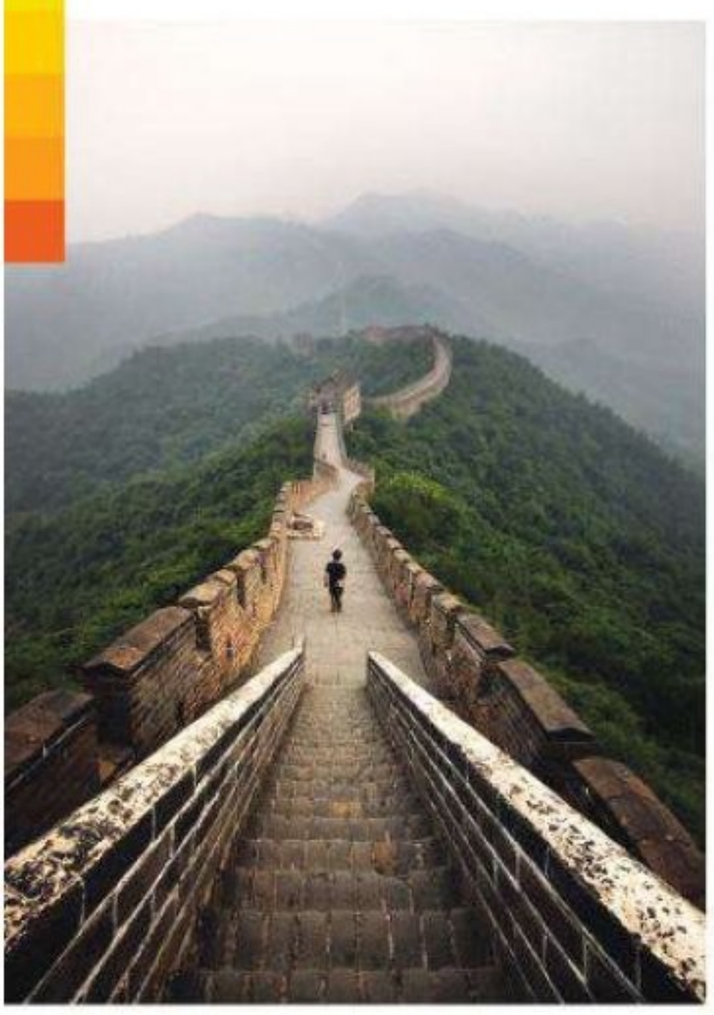

3rd Place $100 Prize

STE MURRAY, 24, PHOTOGRAPHER/DESIGNER, DUBLIN, IRELAND (WWW.STE.IE)

"We got to the Mutianyu entrance of the Great Wall of China early. The light wasn't as strong as I had hoped, but it gave everything a serene calmness and stillness. I hung back and let my traveling buddies walk ahead; I caught Conor just as he stepped into the very center of the frame, connecting the natural and manmade worlds. I had the urge to clone out Niall, but I like that he's hidden there." **TECH INFO: Canon EOS Digital Rebel with Sigma 10–20mm f/4–5.6 EX DC HSM lens at 10mm; 1/60 sec at f/4, ISO 800. Cropping and minor adjustments in Adobe Photoshop CS5.**

2nd Place $200 Prize

GLEN ESPINOSA, 28, NETWORK ENGINEER, SINGAPORE (GLENESPINOSA.COM)

"Inspired by pro photographer Daniel Cheong's cityscapes, I visualized a wider perspective of Singapore's Marina Bay. I thought the best spot to capture a bird's eye view of the scene was the Marina Bay Sands Skypark. Despite using a Gorillapod (tripods are not allowed), I was still worried about camera shake—people walking on the observation deck cause it to move. So I opted for a higher ISO to shorten the exposure." **TECH INFO: Joby Gorillapod-mounted Canon EOS 5D Mark II with 15mm f/2.8 Fisheye Canon EF lens; 2 sec at f/8, ISO 800. Minor corrections in Photoshop CS5.**

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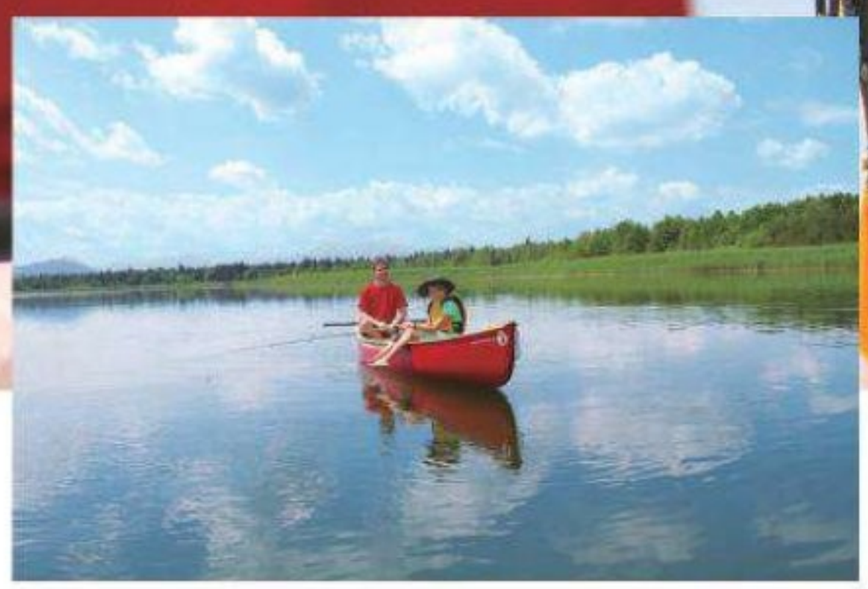

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*Sony digital SLR camera bodies rely on the camera's image stabilization function. For that reason, the VC (Vibration Compensation) image stabilization function is omitted from lenses manufactured with Sony DSLR mount.

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1st Place
$300 Prize

TIM BARTO, 35, SOFTWARE ENGINEER, STERLING, VA (WWW.TIMBARTO.COM)

"Taking in the manmade Ice Castles in Silverthorne, CO, I positioned myself beneath a narrow tunnel with a group of icicles hanging above my head, about 12 feet off the ground. To get the wide-angle, elongated perspective I wanted, I held the camera above my head, taking test shots to meter the scene. I used the camera's live view LCD to compose and focus the shot, with the midday sun overhead and filtering through the ice—causing the ice to melt. Just before each shot, I had to wipe down the lens."

TECH INFO: Canon EOS 40D with Sigma 10–20mm f/4–5.6 EX DC HSM lens at 20mm; 1/100 sec at f/10, ISO 100. RAW conversion in DxO Optics Pro 6; contrast and sharpening adjusted in Photoshop CS5.

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These cameras accept the latest accessory eye-level Olympus electronic viewfinders, and both have built-in art filters for creative effects. The LCD in the E-PL5 tilts an amazing 170 degrees upward and 65 degrees downward for capturing subjects from almost any angle, and the E-PM2 provides a Direct Live Guide Button, and FAST AF with Face and Eye Detect. Both offer full support for Toshiba's recently introduced Flash Air Card, an SD card that can create a Wi-Fi hotspot. Combined with the Olympus application for iPhone and Android, sharing images with friends, clients, and on social networks has never been easier.

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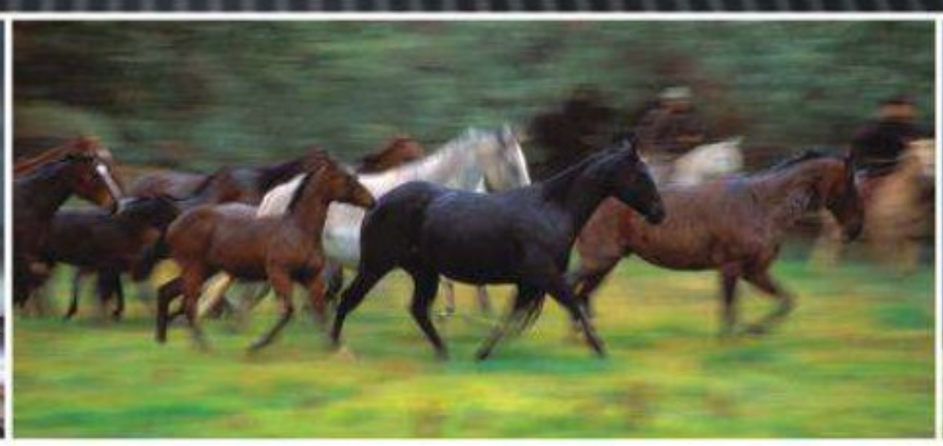

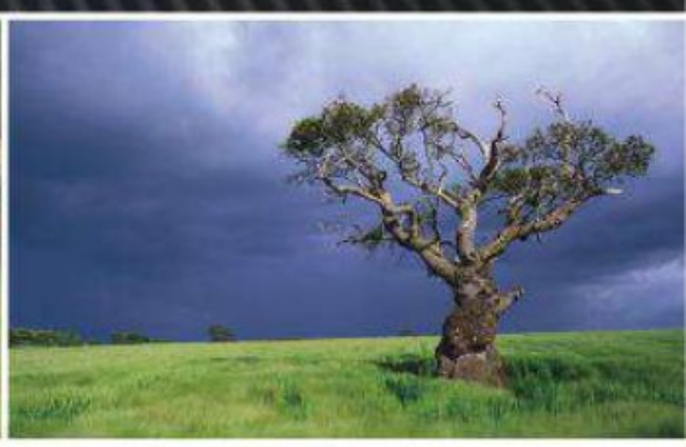

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*Among digital cameras with interchangeable lenses available as of February 8, 2012, when using the OLYMPUS M. ZUIKO DIGITAL ED 12-50mm F3.5-6.3 EZ lens with the E-M5, based on Olympus in-house measurement conditions. **As of May 1st, 2012.

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HOW

EXPERT TIPS AND TECHNIQUES FOR BETTER PHOTOS

BRING SOME PRO-CALIBER TECHNIQUES TO CATS AND CUT FLOWERS

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EXPLOIT TOP MIAMI PHOTO OPS

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CREATIVE THINKING

DOUBLE DOWN

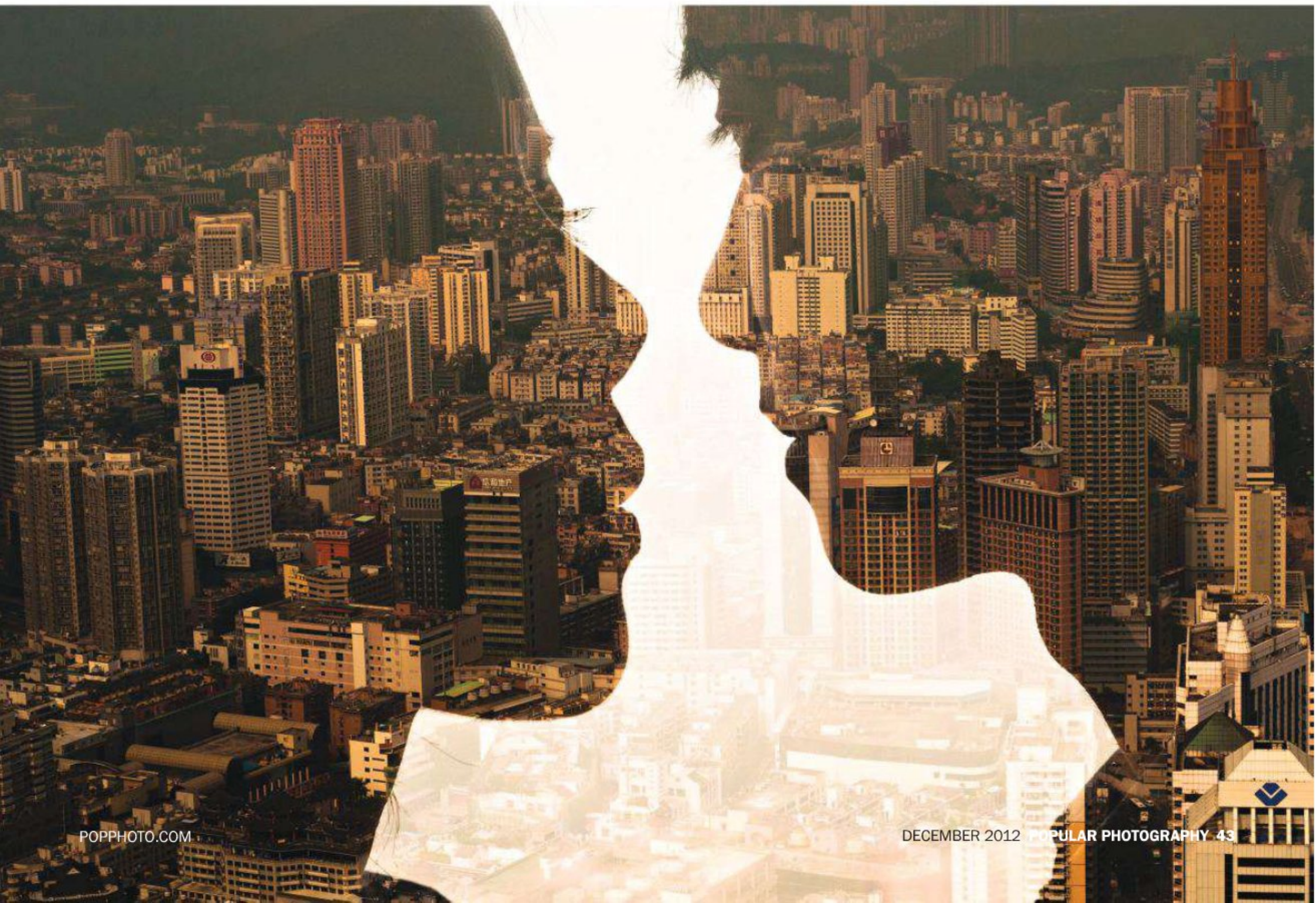
Mix double exposures with reflections

ANYONE WHO has gazed out at the view from a skyscraper's observation deck can't help but appreciate the scale of the world below. There is a kind of awe that accompanies this view of a city, a sense of being incredibly small in something incredibly large.

Photographer Jasper James, who is based in Beijing and London, felt this twinge, prompting him to find a visual connection between the vast city and its people. He began experimenting and eventually the work became his "City Silhouettes" series; he created the image here in Shenzhen in 2011.

The idea first took hold while James was appreciating the view

For more of James' "City Silhouettes" series, visit jasperjames.co.uk. His exposures: usually 1/60 to 1/90 sec at f/5.6 to f/8, ISO 200.



JASPER JAMES

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from an observation deck of a skyscraper in Tokyo. "I wanted to make some images that reflected the feeling of being part of the great city below, but also being so high above it," he says.

He began playing around with silhouettes and then arrived at the idea of using double exposures. James also began collaborating with Boris Austin, another photographer, to strengthen the ideas.

The technique for creating photographs with multiple exposures is relatively simple whether you use film or software, but obtaining the results you want is far from straightforward. The challenge is to create an image that evokes a feeling that is greater than the sum of its parts.

"Originally I was doing this on film with a Mamiya RB67, working the shot out with a Polaroid back, and then I switched to a Nikon D300 and double-exposed digitally in camera," he says.

James played with his Nikon's multiple-exposure settings to get the what he wanted. For this shot, he first exposed for the city, then positioned his models and set a second exposure to capture them in sihouette, overexposing the city in between.

After scouting out locations and best times to shoot (usually just before sunset, when colors are vivid), the photographer went to work with a specific plan, while being open to whatever might happen serendipitously.

"For this shot, we asked one model to speak into the other's ear, for a feeling of intimacy," James says. "I guess the images are popular because they're visually quirky, and can be read in many ways. I like for people to find their own meanings."

—Laurence Chen

ALI GOSONOTOMO

Rocked

Burning down a distraction

Ali Gosonotomo shot this ship graveyard in Jakarta, Indonesia, with a Nikon D3 and 24mm f/1.4D AF Nikkor ED lens. Exposure at ISO 100 was 1/160 sec at f/11.

THE DECAYING hulks set against a sparkling modern skyline makes for a nice ironic contrast in Ali Gosonotomo's photo. But the rocks bothered us: While they serve as a compositional element, they just seemed too prominent in the picture—a distraction.

We ruled out cropping, so we settled on burning down (darkening) the rocks with masks and Curves in Adobe Photoshop CS6. To adjust the color, we used a spot on the rightmost building to assign a gray point, used Curves to make this neutral gray, then added back a bit of warmth. Finally, we used masks and Smart Sharpen to get crisper detail in the boats and buildings. Time fixing: 15 minutes.

Gosonotomo creates images in many different genres. You can see a lot of his work at 500px.com/alee_g. *—Dan Richards and Debbie Grossman*

TIP FROM A PRO

OUTSOURCE YOUR PRINTING

IF OUR D.I.Y. holiday card how-to on page 82 inspires you to try making your own cards this season, short-run digital printing may be your printing method of choice. Better than offset, home inkjet, or copy-shop printing, digital printing done on Heidelberg or Indigo presses offers a wide variety of paper stocks, surfaces, and card formats. Turnaround times can be as short as overnight, and costs are reasonable—usually about $1 per card, including envelope, for 100-card runs. Says photographer Kyle Dreier of Nashville, "Short-run digital printing done at local print shops is a step or two above what you might get at business-oriented establishments like Kinkos. Nashville's well-known Midtown Printing [midtownprinting.com] is one I like."

AMY HERNDON

Photographer from Tulsa, Oklahoma

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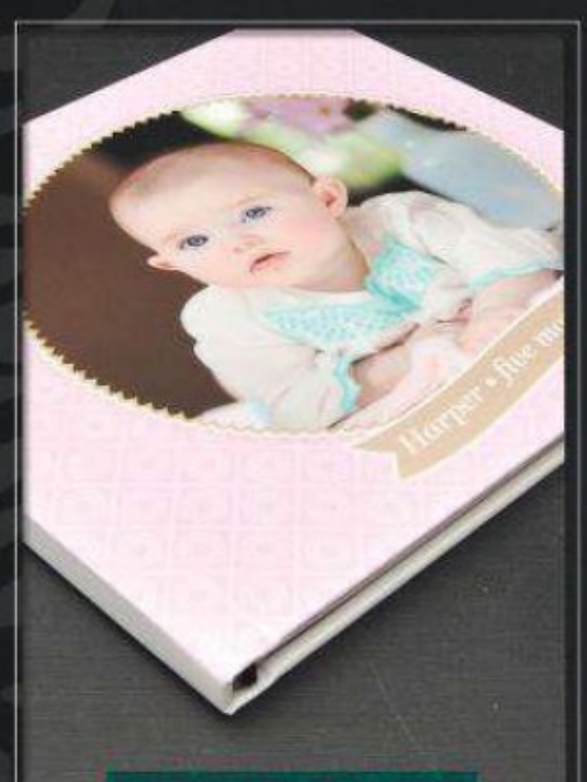

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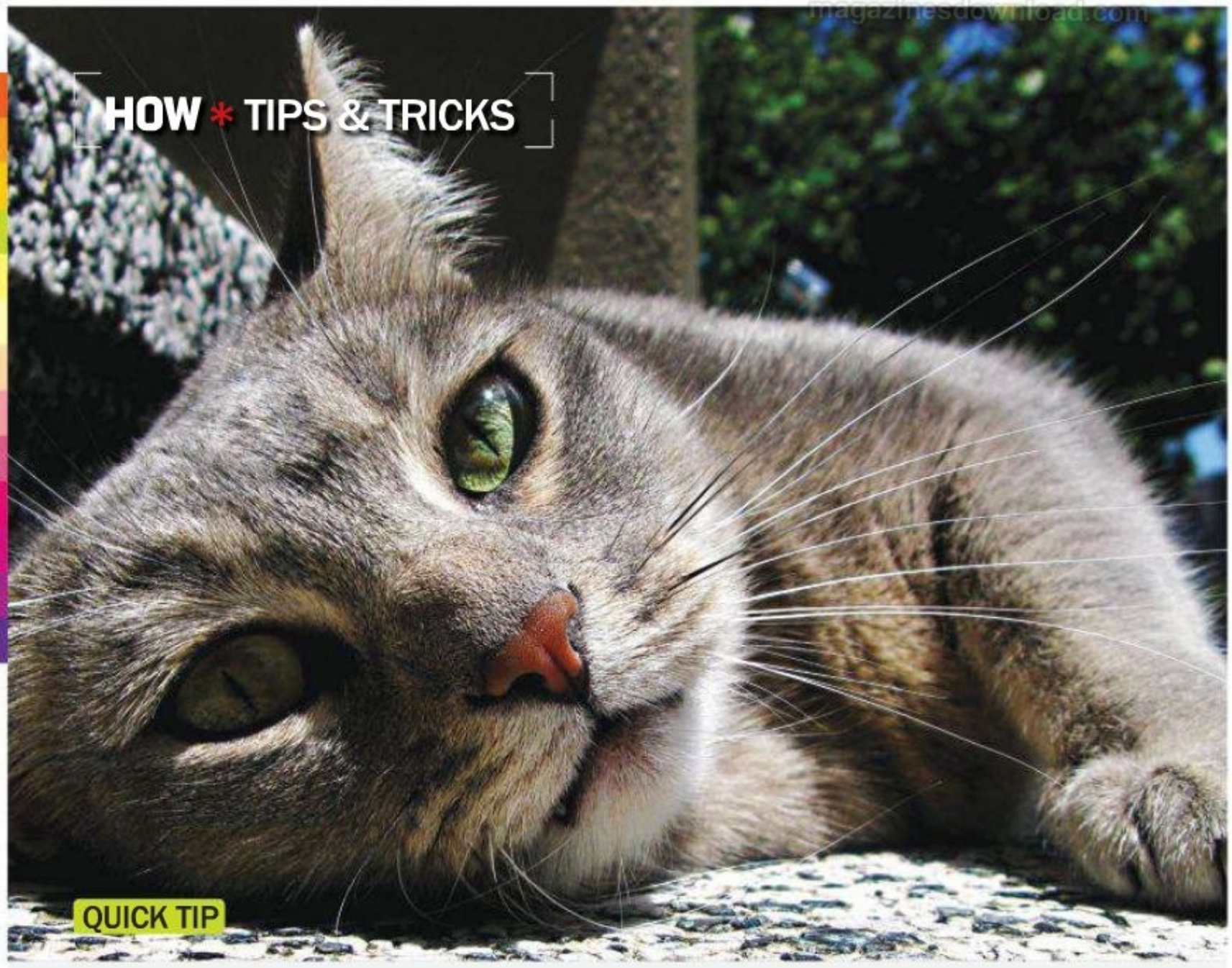


QUICK TIP

Cat's Eye

For pretty kitty photos, go slow

"I WANTED a cat's-eye view of my neighbor's pet, so I set my Canon PowerShot G9 on the step of my stoop and waited for her to get accustomed to it," says San Francisco-based artist and healthcare worker Darwin Bell. "Because the camera was a nonthreatening compact, she wasn't disturbed by it."

Soon enough, he reached down, pressed the shutter, and nabbed this beauty. His tips for feline photos:

- **AVOID BIG CAMERAS** and lenses. When cats see big lenses, they tend to nose them. "You don't want that," says Bell. Use a wide-angle zoom setting, a compact camera that focuses close, and one like the G9 that has an articulated LCD screen.
- **NATURAL LIGHT IS BEST.** Cats often bolt when a flash goes off.
- **FOCUS MANUALLY** to assure what should be sharp is indeed sharp. Luckily, compact cameras, even at their largest apertures, provide deep depth of field.

—Peter Kolonia

Bell exposed for 1/1250 sec at f/4 and ISO 80. You can enjoy more of his work at www.flickr.com/photos/DarwinBell.

DARWIN BELL

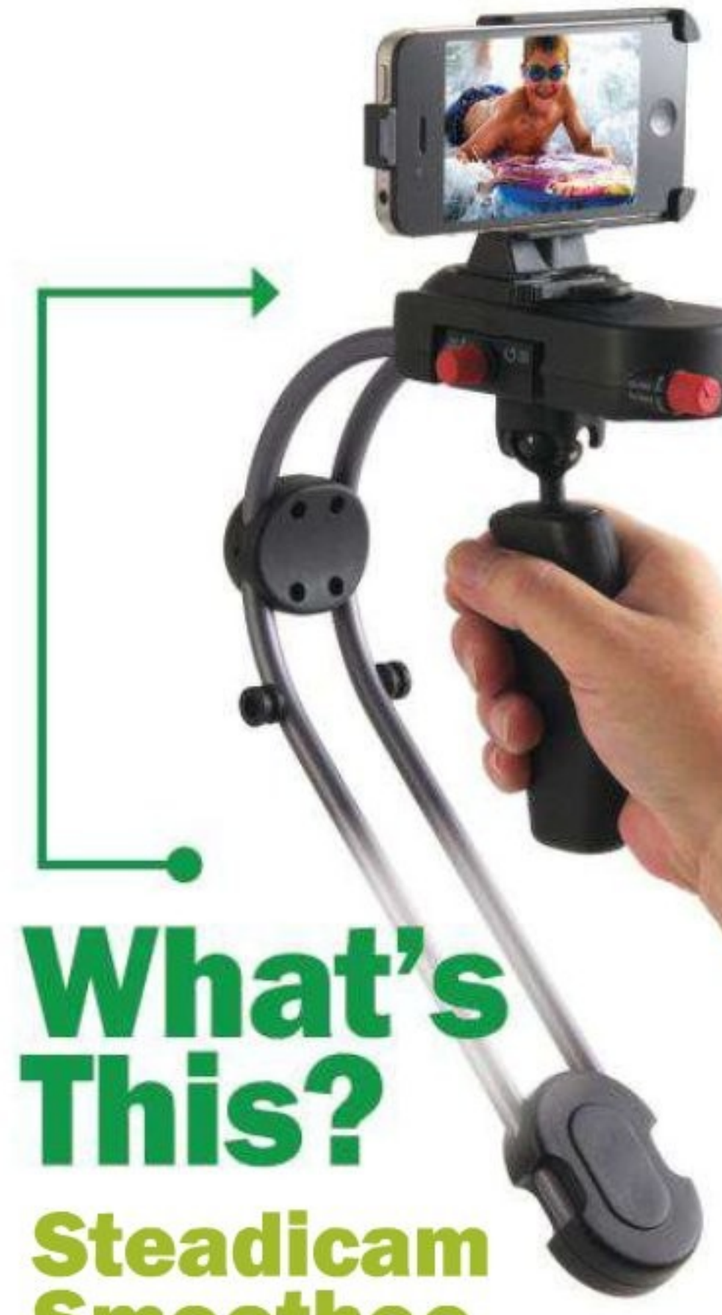
30-SECOND SOFTWARE

BRUSHES IN APERTURE

We've taken a shine to Apple Aperture 3.0 lately, particularly for the precision of the Detect Edges function in its brushable tools. And while getting to the brush function is obvious when you're using a Quick Brush like Dodge or Burn, it's also possible to access the brush tools from the Enhance panel. So if you want to paint in simultaneous adjustments to Contrast, Definition, Saturation, and/or Vibrancy, click the little brush icon in the top right corner of the panel to bring up floating the Enhance Brush menu. From there you can define the properties of your brush and add or subtract the effect.

—Debbie Grossman

DEBBIE GROSSMAN



What's This?

Steadicam Smoothee

▶ **What it is:** A gimbal-style stabilizer, the handheld Smoothee ($149, street) enables shake-free video clips from Apple iPhones.

▶ **How it works:** The gimbal mechanism balances the phone atop an adjustable, weighted frame that allows the phone to float almost shake-free.

▶ **Who it's for:** Anyone who wants better iPhone videos. It takes practice and doesn't work in wind, but it can greatly improve mobile-phone video footage. Also nice: The mounting foot doubles as a tripod head and table-top support for your iPhone.

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"I don't usually like photos or videos of myself skating. It's so easy to criticize yourself. But this photo has a lot more going on than just the trick..." —Isaac Roxburgh

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Miami Nice

Everywhere you turn, potential pictures

"THE LIGHT in Miami is mesmerizing. In winter, its clarity takes your breath away," says Robin Hill (miamiphotographer.com), who wandered there as a travel shooter some 25 years ago and never left. "Combine this with the vibrant colors of the buildings and the environment, and you have a very attractive location for photography." We recently asked Hill, who now works primarily as an architectural photographer, to share his favorite Miami haunts.

Ocean Drive (between 5th and 16th Streets) on South Beach is home to the legendary strip of 1930s Art Deco hotels. "This is the iconic center of Miami's visual essence," says Hill. Sunrise until midmorning is a good time to shoot these east-facing facades. For a cool foreground: A few hotels have cars from the 1950s permanently parked out front. Be sure to return at dusk when colorful neon signs come on.

Nearby, the pedestrian-only Lincoln Road is home to Frank Gehry's New World Center. "The outside is fairly conventional," says Hill, "but inside it's magical." On Friday nights he suggests hanging around to people-watch and grab street shots as performances are projected on a giant outdoor wall.

In the city proper, explore the Wynwood Art District, which contains one of the world's best collections of graffiti. Best spot: Wynwood Walls on NW 2nd Avenue at 25th Street. A few miles south is Little Havana (SW 8th Street); check out Maximo Gomez Park for local characters playing dominoes and chess, says Hill.

Vizcaya Museum and Gardens offers one of America's great historic house museums, with grounds that boast classical statues, topiary, and fountains with marvelous views of Biscayne Bay. For a more immersive nature experience, Hill suggests Fairchild Tropical Botanic Gardens in Coral Gables—an 83-acre oasis of tropical plants. *—Jeff Wignal*

Don't stop shooting when the sun goes down. Buildings such as the Icon South Beach (above) and Cesar Pelli's gorgeously lit Arsht Center opera house come vibrantly alive at dusk.

ROBIN HILL

More Miami to Explore

December begins the peak season in South Florida. For advice on capturing the areas's natural splendors, see page 62.

- **ART BASEL MIAMI BEACH** **December 6–9, 2012** Over 260 art galleries descend on the city; many represent photographers.
- **BIG CYPRESS GALLERY** **Tamiami Trail, Ochopee** Where Clyde Butcher's famous b&w Everglades landscapes live.
- **BILL BAGGS CAPE FLORIDA STATE PARK** **Key Biscayne** A one-mile stretch of increasingly rare condo-free beach.
- **THE BILTMORE** **Coral Gables** A resort hotel built in 1926, it offers 150 acres of sensational architecture and gardens.
- **BISCAYNE NATIONAL PARK** **Convoy Point, Homestead** Miami's primo access spot for underwater shooting.
- **DEERING ESTATE AT CUTLER** **SW 72 Avenue, Miami** A 444-acre preserve of wildlife, floral, and landscape pictures.
- **GOLD COAST RAILROAD MUSUEM SW 152 Street, Miami** If antique trains are your thing, you'll find 40 of them here.

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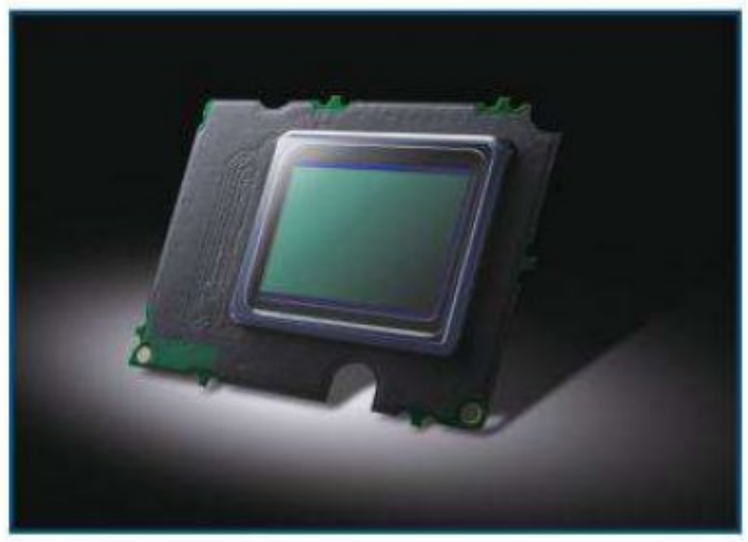
LUMIX revolutionized the SLR camera in 2008 by eliminating the mirror, making the world's first Digital Single Lens Mirrorless (DSLM) camera. In addition to making the body smaller and lighter, the new camera achieved better handling features consumers were looking for.

In 2012, the G5 took the next major step inheriting all previous innovations, it added new image rendering capabilities and nimble mobility while also optimizing video performance. Once again, LUMIX mirrorless technology is driving system camera innovation.

16.05–MEGAPIXEL DIGITAL LIVE MOS SENSOR

Panasonic has added its original pixel mix technology and the inherent high speed of the CMOS sensor to the 16.05-megapixel Digital Live MOS Sensor. Processing is further designed to minimize noise generation in the new sensor. Finer wiring around the photodiode achieves a higher aperture ratio, which results in higher resolution and an excellent signal to noise ratio while a new high performance transistor speeds up processing. Taking full advantage of the Digital Live MOS Sensor and Venus Engine, images can be shot in low lighting at the high ISO setting of 12,800.



TOP CLASS ASPHERICAL LENS PRODUCTION

LUMIX G lenses are all developed in-house. Their quality is inspected by the UA3P Ultra-High Accuracy 3D Profilometer, an instrument that was originally developed by Panasonic for use by optical manufacturers all over the world. Panasonic's collaboration with Leica Camera AG also resulted in stringent quality standards for these advanced lenses and a system in which each and every lens is inspected.

LIGHT SPEED AUTO FOCUS

The incredible speed of the G5 precisely captures moving subjects. It features the fast auto focusing, called Light Speed AF, which is achieved by reducing the detection time for focusing by doubling the drive speed from 60 to 120 frames per second. The G5's advanced Contrast AF system makes sure you always capture the image that you want.

Miniature Effect

LUMIX G5

AUTO FOCUS TRACKING

Just touch the screen and the G5 locks on and automatically "tracks" the subject as it moves, constantly adjusting the focus for the best results.

CREATIVE CONTROL

Fourteen filters serve to relay your shooting intention and make images even more impressive. You can also add the filters to video recording.

HIGH PERFORMANCE 6 FRAMES PER SECOND BURST SHOOTING

The G5 can fire off up to 6 frames per second in full 16.05-megapixel resolution with its mechanical shutter. Even higher-speed burst shooting is possible when the electronic shutter is used, like 20 frames per second for capturing race cars and other subjects that are even difficult to see with the naked eye.

EYE SENSOR AUTO FOCUS

The high resolution Live View Finder features the Eye Sensor Auto Focus function, which automatically starts focusing when you look into the viewfinder to capture that spur of the moment image. It's almost as if the camera understands your shooting intent and speeds up the focusing process to get the sharpest, most accurate shot possible.

BURST SHOOTING WITH AUTO FOCUS TRACKING

Burst shooting with auto focus tracking automatically maintains the focus while tracking moving objects. This lets you capture high quality images in full 16.05-megapixel resolution at 3.7 frames per second.

EXACTLY THE KIND OF FULL-HD VIDEOS YOU WANT 1920 X 1080 60P

The G5 records high-resolution Full-HD 1920 x 1080 60p with 28 Mbps videos in AVCHD Progressive (MPEG-4/H.264) format. Upgrading the full-HD recording capability from interlaced to progressive, subjects with fast motion or fine details are reproduced even more clearly.

To learn even more about the LUMIX G5, please visit **Panasonic.com/LUMIX**

HOW * LIGHTING

Air Hair

A mane light to capture every strand

TIM TADDER

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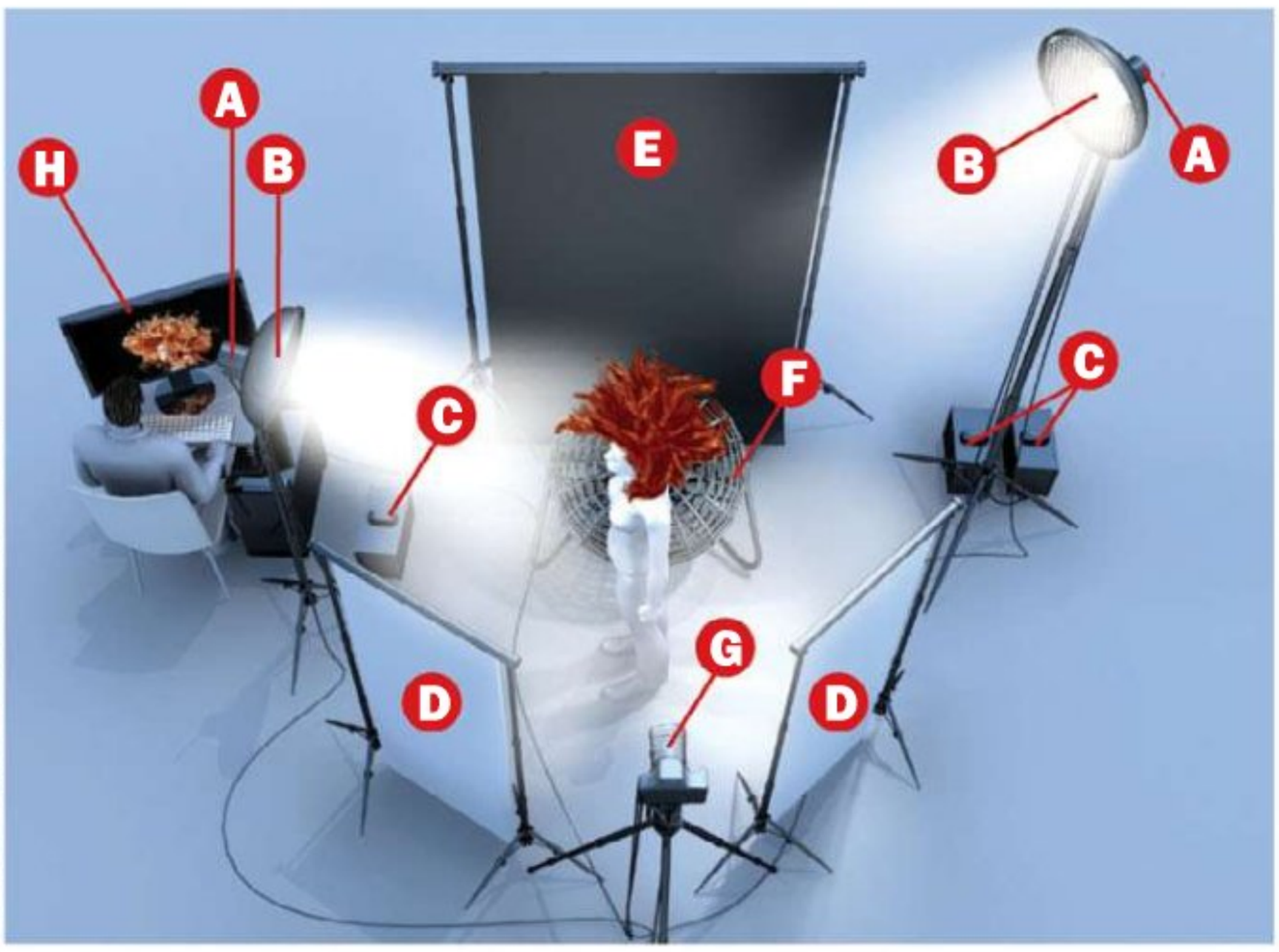
WHEN TWO TUBES ARE BETTER

SIMPLE ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬ COMPLEX



KRIS HOLLAND/MAFIC STUDIOS (ILLUSTRATION)

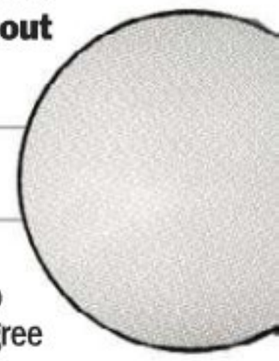
To freeze his model's hair mid-flight, Tim Tadder lit her with two Profoto ProTwin Tube flash heads (A), each outfitted with Profoto beauty dishes (B) and 20-degree grid attachments, and powered by a total of three Profoto 7a power packs (C). Two reflectors (D) contributed front fill, and his background was a roll of black seamless (E). A 50-inch industrial fan turned to its highest setting (F) lifted the model's hair aloft. Tadder outfitted his Phase One P65+ camera and digital back with a Phase One 110mm f/2.8 AFD lens (G), and tethered the rig to a desktop computer (H) running Phase One's Capture One Pro 6 software. "In post, we used Adobe Photoshop extremely lightly for this shot," says Tadder. "We just fixed some stray hair and cloned out some of the awkward bits."

What was the hardest thing about producing this shot? "Nothing," he answers. "If I were digging ditches or curing cancer, we could talk about difficulty. This was ten exposures of pure fun."

THE GEAR

Profoto Softlight beauty dish **($697, street, as kit)**

Profoto ProTwin flash head **($3,089, street)**



Profoto 20-degree Grid **($116, street)**

TIM TADDER, one of the country's hottest advertising photographers, has made a career of freezing all sorts of action in its tracks—like the billowing red hair of model Sarra Hansen in the photo shown here. Held aloft by a massive industrial fan on the floor behind her, her tresses flapped wildly, yet Tadder, based out of Encinitas, CA (timtadder.com), still managed to capture every strand of hair tack-sharp.

How? With twin-tube strobe heads. Also called bi-tubes, these are unlike most studio lights in that they have two flash tubes and two power cords per head.

Tadder's, from Profoto, use U-shaped tubes that were powered by two Profoto 7a power packs each. This setup afforded him shorter flash durations and quicker recycle times than would have been possible with a single-tube head producing an equal amount of light.

"To achieve the kind of sharpness you see in the moving hair here, I needed action-freezing power of really short flash exposures," says Tadder. "It's that frozen quality that makes the image so striking. I didn't want blurry hair."

Because Tadder had two power packs per head, he could have produced twice the light, 4800 watt-seconds, from a single head had he chosen to use full power. But he didn't need that much light. He modified the output with a beauty dish and 20-degree grid, and used reflectors for fill.

Tadder offers a few other tricks to pull off a shot like this:

- **DON'T USE** a regular house fan. It won't be strong enough. Rent a large industrial-grade wind machine and set it to High. It should be able to suspend all the hair—if only for a moment or two—so you can get the shot.
- **DON'T WEIGH DOWN** your model's coif with lots of hair product.
- **AVOID HAVING THE MODEL** toss her hair around. "Yes, the head toss gets the hair moving, but it's the huge fan that keeps it up," says Tadder. "Besides, you could hurt the model's neck."
- **"AND, OF COURSE,** make sure your model has tons of hair," the photographer advises.

—Peter Kolonia

Tadder exposed for 1/1600 sec at f/11, ISO 100. He could set such a fast shutter speed and have it assist in freezing the hair mid-air, because the leaf shutter in his 110mm f/2.8 AFD lens, like all leaf shutters, can sync with the flash at any of the shutter's speeds.

SIMPLE COMPLEX

Photo Redo

How to remove a figure and give a picture new life

COURTESY OF JENNIFER MARSHALL

AS A 13-YEAR-OLD growing up in Point Fortin, Trinidad, Jennifer Marshall and her best friend saved up to have their portrait taken at a local studio. Now living in New York City, Marshall still had a print, but it was somewhat the worse for wear. And it was the only picture she had of herself at that age. When she asked if I could restore it and convert it to a solo portrait, I was excited for the challenge.

A project like this takes time, patience, and imagination. Here's how to work on this one; each picture you do will involve a similar process. One thing is on your side, though. When people look at pictures, they usually assume the pictures are true. So don't worry about making it perfect—your viewers will be too busy enjoying the photo to wonder whether or not it's fake.

—Debbie Grossman

Lots of cloning and healing made Jennifer Marshall's friend disappear.

See the Steps in Action

Download the PopPhoto Interactive app from Apple's app store and point your iOS device at the page to see a video version of this tutorial.

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Step 1

Start by making a copy of your background layer; this way you'll have an accessible copy of your original image if you need it. When removing someone from a picture, use what you can from the original and invent as little as possible. Here, we can use the background on the right to cover the figure we're removing. **Type L to get the Lasso tool, then make a selection around the extra background on the right.**

Step 2

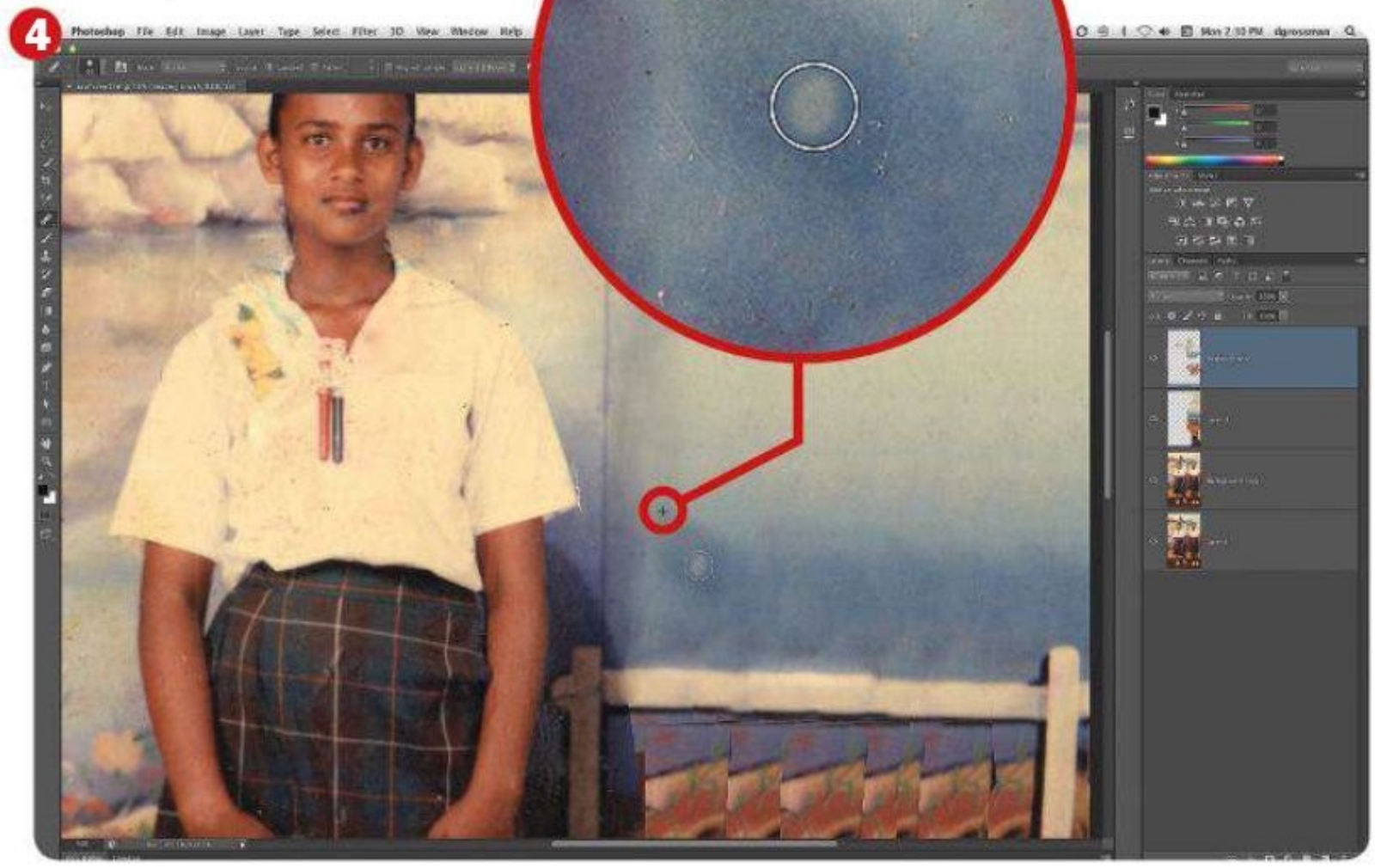
Then type Ctrl (Command on a Mac) + J. This keyboard shortcut copies all the selected information and pastes it into its own, new, layer. **Now type V to get the Move tool, and shift your copied image information to the left to cover as much of the figure as possible.** Then use the Crop tool to trim out the background that you copied and moved, and to get a clear view of your progress.

Step 3

Continue to use the method from Step 2 to cover the figure: **Select chunks of your image, type Ctrl+ J to copy them to their own layer, and shift them to cover more and more parts of the figure.** (Sure, you could use the Clone Stamp for this process, but for bigger areas this method can be more precise and much faster.) When you need to, type Ctrl + E to merge your copied areas to the layer below. This will keep your cover-up sections together on a single layer. After a few minutes you'll have a draft of your final image that will need quite a bit of finessing using the cloning tools.

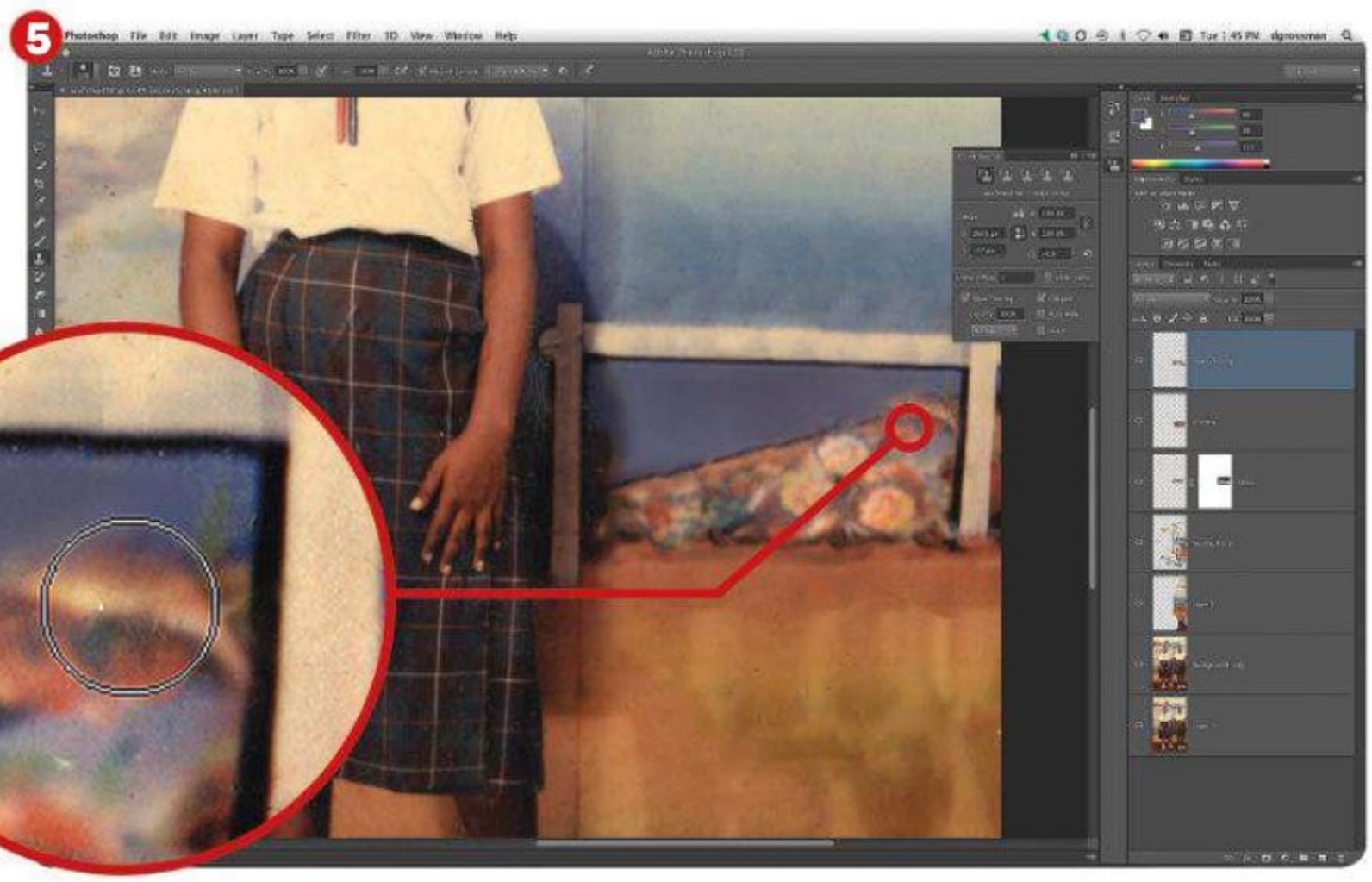
Step 4

Create a new layer and type J to get the Healing Brush tool. Make sure Aligned Sample: Current and Below is selected in the Options Bar, and use the Healing Brush to get rid of any jagged edges. **Sample smooth sections of the photo and paint over the seams to blend them together**. This is a quick way to clean up areas, like the water, that are low on detail. While you're working with the Healing Brush, use the tool to fix any blemished areas, such as spots or pen marks.



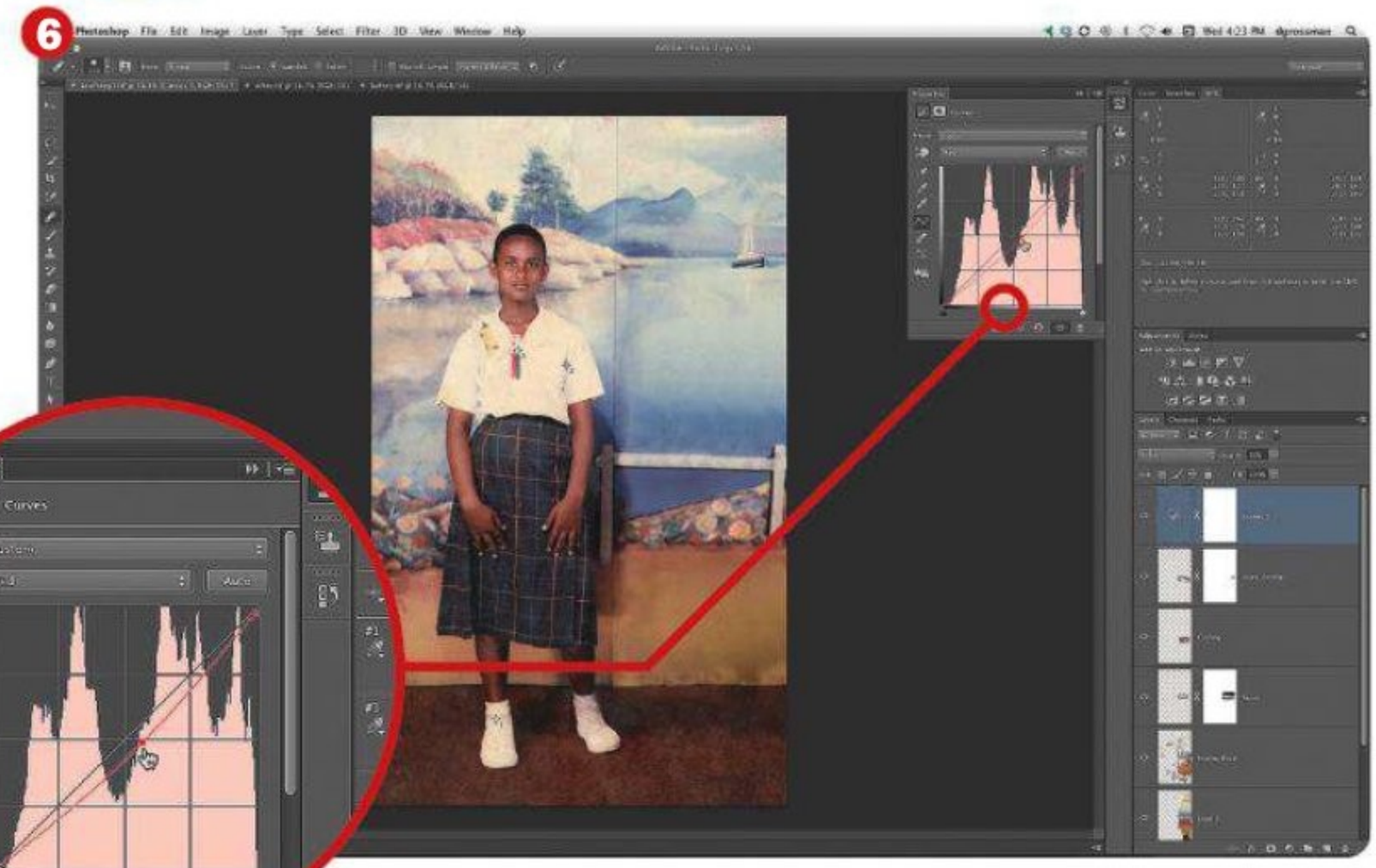
Step 5

Once you get the smooth areas done, you can tackle the areas where you'll need to invent new detail. Here, the Clone Stamp (and all of its options) is your best friend. Type S to get the tool, then go to Window > Clone Source to see all of its awesome controls (note: you can access these for the Healing Brush, too). **Click the Flip Horizontal or Flip Vertical icons to grab flowers from the left side of the image and clone them in reverse on the right.** You can also rotate the clone source as much as you like. Since pattern repetition is a clue that the image is retouched, do your best to transform the data you grab from other areas in the picture.



Final Step

As long as the image's color cast isn't major, you can tackle it when you finish retouching. **Make a Curves Adjustment Layer and maneuver each color channel until the picture looks more neutral.** In this case, total neutralization removes too much of the picture's original vintage character, so dial down the Adjustment Layer's opacity to around 50 percent.



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Sigma Pro Lindsay Adler captures this elegant couple on their wedding day. Taken with Sigma's 24-70mm f/2.8 lens.

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HAROLD DAVIS

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Pure Petals

Make flowers look translucent

HAROLD DAVIS' ethereal floral arrangements have a purity and translucence that borders on the spiritual. His website, www.digitalfieldguide.com, offers a virtual garden of shimmering orchids, irises, lilies, and poppy petals, all carefully produced in his Berkeley, CA, studio.

If you imagined these photos are difficult to pull off, you'd be right. His explanation of the technique, though, is disarmingly simple: "I take out the midtones and shadows." Still, a single image can take days to perfect.

Davis starts with a large light table left over from his slide-shooting days on which he places his subjects. You can start with a small table for single blossoms, though—one with daylight-balanced tubes. After mastering the technique, upgrade to a larger table for grander arrangements. Tempted to build your own? You can backlight a sheet of transluscent acrylic, but a real light table is easier to use and gives consistent results.

You will also need a good macro lens, a flash (or well-positioned window) for front fill light, and image-editing software that lets you work with layers and layer masks.

Davis achieves his translucent look with the right combination of back light, front light, bracketed exposures, and image editing. In Adobe Photoshop CS6, he layers between 5 and 15 different exposures, and then essentially erases their midtones and shadows. You will find a detailed explanation in his excellent book, *Photographing Flowers*, (Focal Press; $30).

He also offers the following suggestions:

- **START WITH ONE FLOWER**, especially if you don't have the knack for arranging. Davis recommends books on Japanese floral design and community college courses on the subject.
- **GIVE YOUR FLORAL ARRANGEMENTS** structure, focal points, rhythm, and the illusion of depth. In the photo shown here, the structure comes from the stems, the rhythm from the repeated shapes and colors of similar flowers, and the depth from the green leaves tucked *behind* the petals.
- **FINESSE THE LIGHT** in front of your subject. Selectively adding light can also give your floral arrangement depth. If you frontlight your flowers evenly, it can flatten out overall modeling. So vary where and how brightly the frontlight falls.
- **PICK THE RIGHT FLOWERS.** Buy a variety of them, with multiple blossoms in contrasting colors. A large, single flower, like the orange day lily in the photo shown here, can serve as a focal point in a composition.
- **EXPERIMENT** with different blending modes when you work with the image layers in editing software.
- **MOISTURIZE!** With some types of flowers, wetting the petals can increase their translucency.

—Peter Kolonia

To shoot his arrangements, Davis used a Nikon D300 (A) and Sigma 50mm f/2.8 DG Macro lens (C), then composited multiple bracketed exposures. He mounted his camera on a tripod and aimed it precisely using a Kirk Enterprises BH-3 ballhead (B).

Step 1

Get the flowers. Diaphanous blossoms such as poppies or cherries work well; most roses will not. Avoid flowers that are wilted or have age spots or tears. While shopping, imagine how the final composition will look.

Step 2

Arrange the flowers on the light table. If you're not very good at this, ask for help from a friend who is. This person should also help you pick out the flowers.

Step 3

Set the front fill light. Davis prefers controlled natural light and places his light table below a window whose brightness he controls by opening or closing venetian blinds. When window light wasn't sufficient, he has also bounced strobes off the ceiling.

Step 4

Make your exposures. Bracket RAW exposures by shutter speeds in the camera's manual exposure mode. Davis prefers f/16 and ISO 100, and his first exposure is what the camera's meter considers correct. He then slows the shutter speed of subsequent exposures by 1 EV until the image is pure white.

Final Step

Apply software. For the translucent look, layer the files with the lightest image at the bottom of your stack. When converting from RAW, keep all settings the same for each exposure. Add hide-all (black) layer masks to each layer and then brush in detail from the darker frames using a soft-edge, partially opaque brush. A low opacity setting is key.

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California Coast

APRIL 5-7, 2013

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We will take advantage of the light at the **Point Lobos State Natural Reserve**, and the opportunity to capture the flora, fauna, and wildlife living in the water, taking to the air and covering the land. Whether you are photographing the harbor seals during breeding season, or pointing your lens at egrets, herons, brown pelicans, or many other avian species here, the outstanding scenic beauty presented as a backdrop is unmatched. It won't take long for you to see why this spot is hailed as "the greatest meeting of land and water in the world."

Venturing slightly inland, we will stop by the historic **Carmel Mission**, one of California's most beautiful in a long chain of missions along the central coast. Turn your lens on this centuries-old architectural treasure, and then step down to the coastal town of **Carmel-by-the-Sea** for a chance to include the charming seaside village in your frame.

As we head on to **Pfeiffer Beach**, we will take some time to photograph surfers - using strobes to create a dramatic effect with the athletes on shore, or considering graceful action shots against stunning coastline. We will also take time to capture the famous sunlit arch as the huge surf crashes around the jagged rocks.

In **Julia Pfeiffer State Park**, you will want to tilt your lens skyward toward the towering redwood, tan oaks, madrone, and chaparral trees. Enjoy a light hike to spectacular **McWay Falls**, where surging water drops 80 feet from granite cliffs into the ocean. Allow your mentors to assist you in getting a silky water effect in your image, by slowing your shutter speed, or by using a specific filter.

There is no question of the sheer breathtaking beauty of the sights, nor the opportunities you will have to expand and improve your photography on this trek to Coastal California. **Sign up today**!

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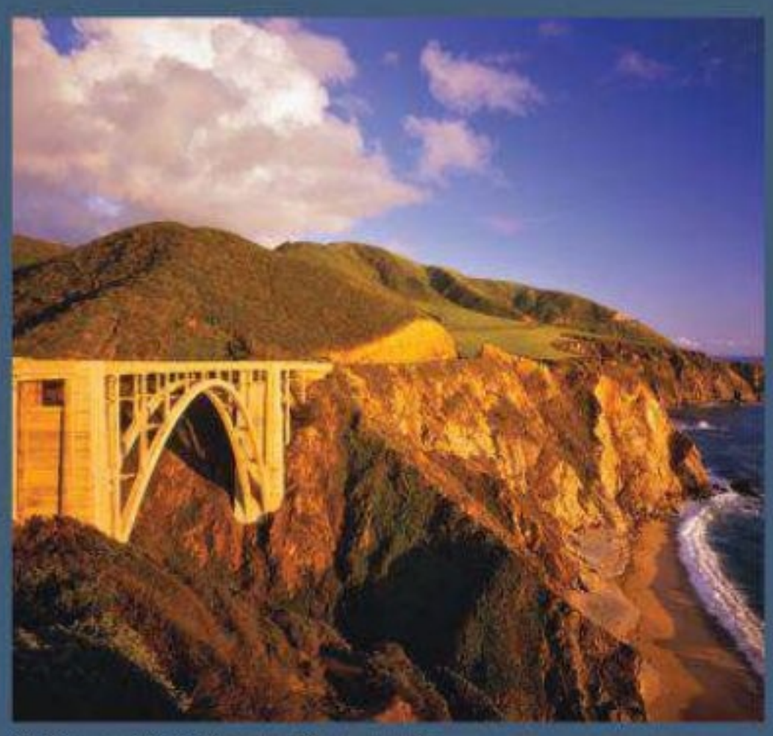
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PALMETTOS, EVERGLADES
Marcellini combined three exposures at 1/5, 1.7, and 2 sec for greater dynamic range. Canon EOS 5D Mark II with 16–35mm f/2.8L Canon EF II lens at f/18; ISO 100.

WARMING TO FLORIDA

While much of the country is heading into hibernation mode, South Floridians are walking around in flip-flops. Mild winter weather makes this the perfect time for photographers to discover the surprising diversity of wildlife and landscapes to be found there—if you're willing to divert from the touristy path and get your feet (a little) wet. *Text and photos by Paul Marcellini*

THERE'S A reason thousands of snowbirds, both human and avian, flock to South Florida in the winter. Bird photographers have already caught on to the various species and their winter breeding cycles in many South Florida locations. But there is much more for photographers to enjoy: cypress sloughs, mangrove forests, pine rocklands, freshwater prairies, and even some very rocky coastlines, with abundant wildlife in many forms.

South Florida has essentially two seasons, wet and dry. The wet season includes daily thunderstorms, sometimes intolerable numbers of mosquitoes, high heat, and high humidity. Winter is the dry season—which means that in an area where the water was waist deep during the wet season, you will now only be in up to your shoes.

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MANGROVE, NEAR BAHIA HONDA STATE PARK **A cold front brought in mackerel clouds. Shot with the same gear as in the opening spread, with combined exposures of 1/8 and 1/30 sec at f/13, ISO 400.**

Mosquitos are fewer (though they never go away completely), temperatures are pleasant, and wildlife populations are more densely concentrated.

Sloshing Around

A standard rental car is the easiest way to get around South Florida parklands—even the dirt roads are well maintained. Lodging is plentiful throughout the area. For the southern portion of the Everglades, you'll find Florida City 10 minutes from the park entrance. For Big Cypress and the northern Everglades, visitors can stay in Everglades City, a quaint fishing town with most amenities. There are hotels located throughout the lower Keys, and in Bahia Honda State Park in Big Pine Key—a great place to shoot in its own right—there are cabins for rent. (Book early, though—this is one of Florida's most popular state parks.)

Kayaks are a great way to get around the shorelines, and you'll find kayak rentals in many places. In the Everglades, you can rent them from the Flamingo marina store. Garl's Coastal Kayaking (coastal-kayaking.com) will even customize tours for photographers. When kayaking, I carry my lenses in rolltop dry bags between my legs for easy access.

Wading is another great way to shoot. When I do it, I wear hiking pants to protect my skin from stinging critters, and of course wading boots, which are usually neoprene slip-ons with a rubber sole. Old tennis shoes can work, too, but I prefer wading boots for the easy on and off and quick cleaning.

Even though winter is cooler, the sun is strong. I always wear a lightweight long-sleeve shirt for protection. Button-front hiking shirts give you an elevated pocket to put small items out of the water's reach. And drinking water is a must here—bring at least 32 ounces for a half day.

Lowepro's Flipside 400 AW is my backpack of choice because of its rear-access zipper. I can keep the waist belt

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Photo Hatchback AW available in two sizes and three colors; 16L shown above.

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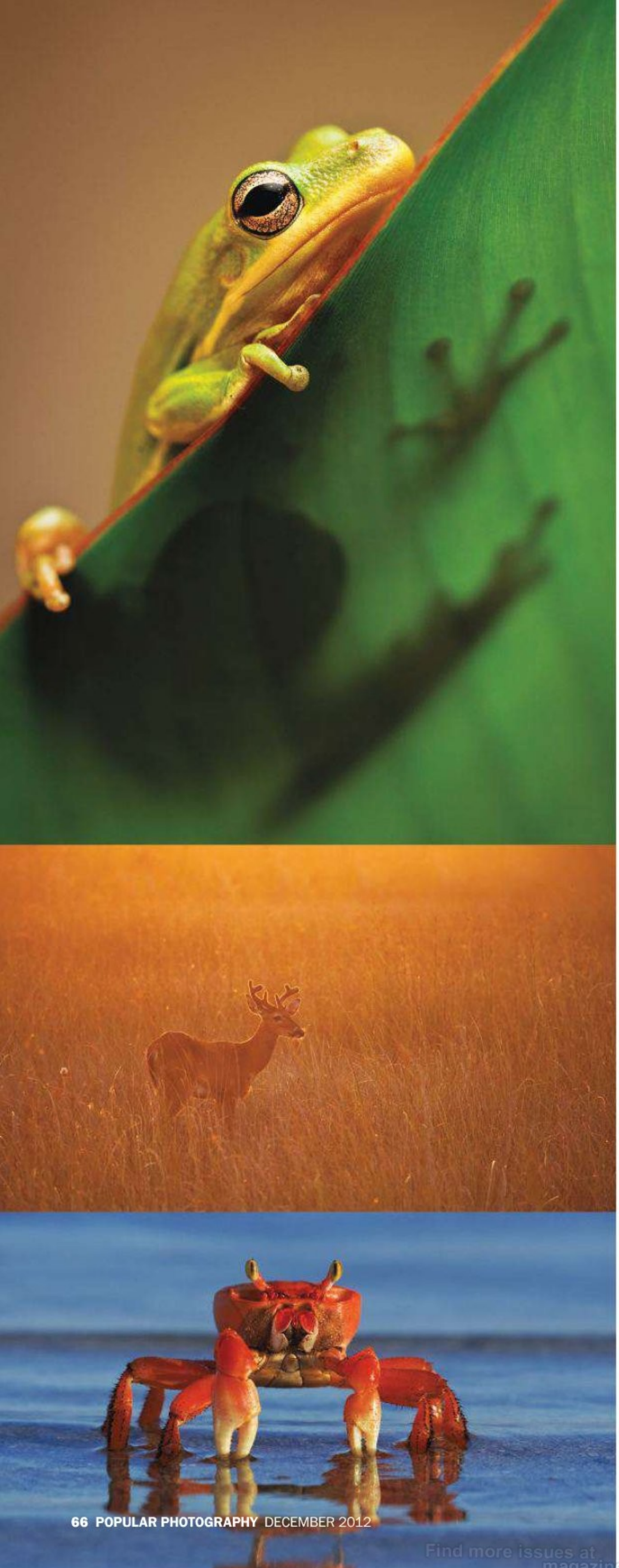

TREE FROG, EVERGLADES
A long macro lens, such as the 180mm f/3.5 Tamron SP Di used here on a EOS 5D Mark II, works well for small creatures; 1/125 sec at f/5, ISO 640.

WHITE-TAILED DEER, EVERGLADES
Marcellini shot toward the sun to get a wash of warm flare. EOS 5D Mark II with 100–400mm f/4.5–5.6L Canon EF IS lens; 1/125 sec at f/6.3, ISO 320.

LAND CRAB, ISLAMORADA
Marcellini suggests seeking out less obvious wildlife, such as this curious specimen. A 100–400mm Canon EF IS zoom was used on a Canon EOS 20D; 1/800 sec at f/6.3, ISO 200.

fastened, undo the shoulder straps, and swing it around to form a table at my waist—handy when shooting above water. And if you have to put it down on damp ground, the side that gets mucky won't be the side that rests against your back.

Littler Landscapes

When I first started photographing landscapes in Florida, I longed for the super-photogenic mountains of the Rockies, the red rock of Utah, and the fall color of Maine. But I soon found I could create compelling images here precisely because of Florida's lack of iconic landforms.

The secret, I discovered, was to concentrate on creating more intimate images. With no grand postcard vistas to be seen, you can focus on engaging foregrounds and midgrounds, which South Florida's plant life offers up in wild profusion. An extra-wide-angle zoom, such as a 16–35mm for full frame, will be your most useful tool for these scenes.

Palmettos typically grow in pine rocklands, a globally imperiled type of habitat. With their contrast in both texture and color to their surroundings, palmettos make for an eye-catching image, as in the opening spread of this article.

Mangroves, one of my favorite types of tree, grow on the edge of land and sometimes completely in the ocean. Given their harsh environment, these reveal their tortured lives—consider the contorted specimen seen on page 64. Red mangroves usually exhibit the weirdest shapes, with amazing arching prop roots that can take on a magenta hue. The prop roots also provide a home for many sea creatures, and these sponges, algae, and small fish can lend additional details to a photograph.

Some great areas for stunted lone mangroves: the Ten Thousand Islands on the Gulf, the barrier islands off Biscayne Bay, and the lower Florida Keys, where there is less development. Anne's Beach in Islamorada in the

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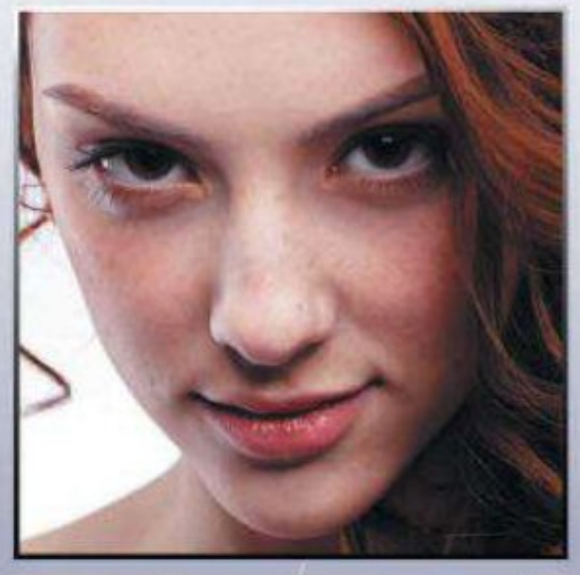

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Keys even has a "lone" tree whose shape is actually made up of all three mangrove species growing together as one.

In Everglades National Park and Big Cypress National Preserve you'll find areas of bald cypress that have been stunted from low nutrients and hard living. Leafless in winter, their stark white trunks provide an interesting contrast to the surrounding habitat and, in the right situation, can seem somewhat ghostly. Typically, these cypresses will be surrounded by sawgrass and some shallow muck, so the aforementioned swamp attire is recommended.

In the sloughs (areas of deeper water), the landscape can completely change. For example, in a microclimate created by a higher availability of nutrients, the trees grow taller and provide cover from the sun, which in turn keeps the humidity higher and shelters epiphytes such as orchids and bromeliads. These provide homes to small animals such as frogs and snakes, which attract hunters like owls. The higher diversity of life in cypress sloughs makes them one of my favorite areas to explore and photograph. To find them, just look for the clumps of taller cypress trees in Everglades and Big Cypress.

LAKE, LONG PINE KEY, EVERGLADES
Top, a three-shot panorama stitch of morning fog, captured at 2.5 sec and f/11, ISO 100, with an EOS 5D Mark II with a 28–75mm f/2.8 Tamron SP Di lens. Below, you don't need clouds to get sky color at sunrise. EOS 50D with 10–22mm f/3.5–4.5 Canon EF-S lens; 0.6 sec at f/11, ISO 200. Cropped to panorama format.

Craggy Coasts

Along the Atlantic coast, Florida is not just white sandy beaches. The Anastasia Formation is a unique outcropping of coquinoid limestone imbedded with sand and shells. Popping up along the coast, great places to photograph the formation are Blowing Rocks and Coral Cove Park on Jupiter Island. Blowing Rocks has a more imposing shelf of rock but does not open until 9 a.m., so Coral Cove is a better place to go for sunrise. (Many people have asked if my images of Coral Cove, such as the one seen on page 132, were taken in California or Hawaii.)

Although Florida boasts its most dramatic sunset skies in the summer, winter can prove quite the opposite. Clouds that build during the day can completely vanish by sunset, unless a cold front moves in bringing clouds with it.

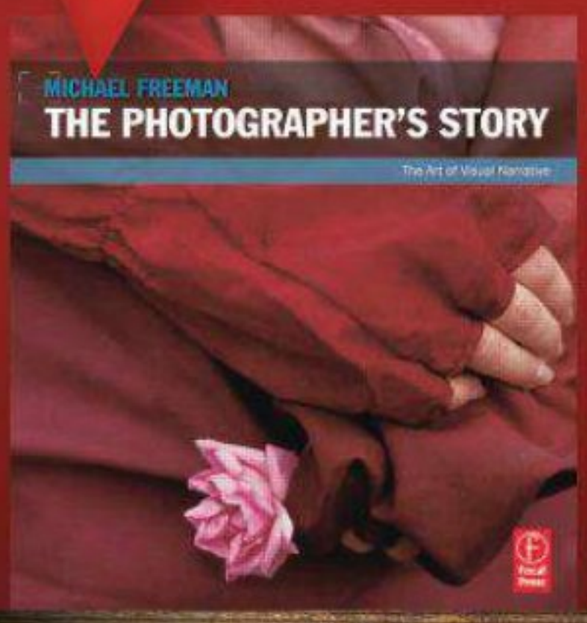
The better plan may be to focus on sunrises, when you'll often find an added bonus of fog that has formed overnight. Check the weather: Look for dew points and air temperatures that are numerically close, and a light wind below 5 miles per hour. Fog can really enhance the mood of an image and looks great in the dwarf cypress and pine rocklands.

Another photo to go after when the sky is blank is the earth's penumbra, or shadow. Seen opposite of

CONTINUES ON PAGE 132

fa la la la la

WITH FOCAL THIS HOLIDAY SEASON



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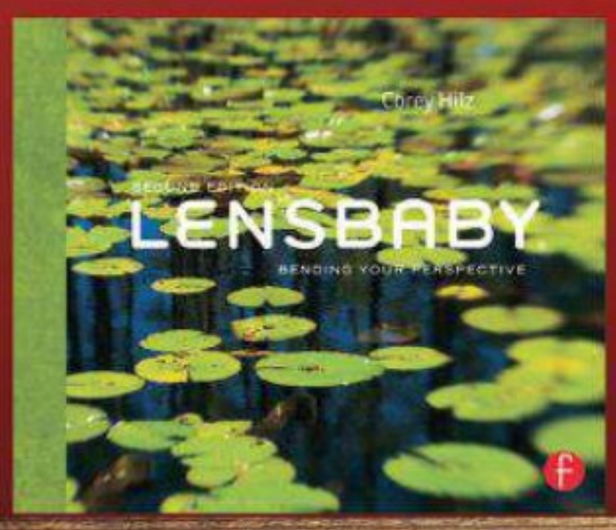

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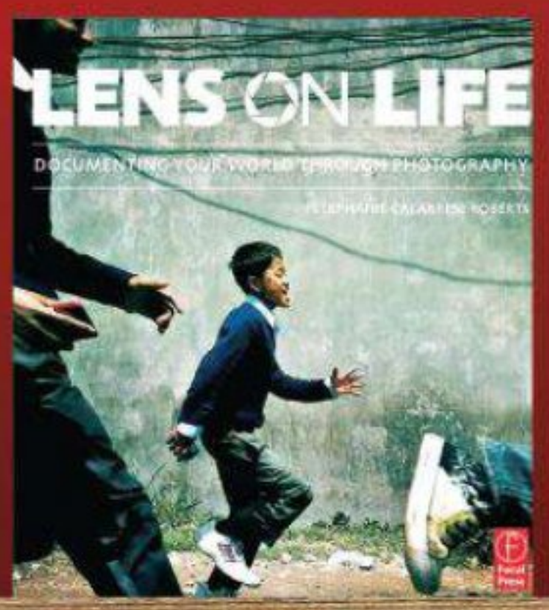

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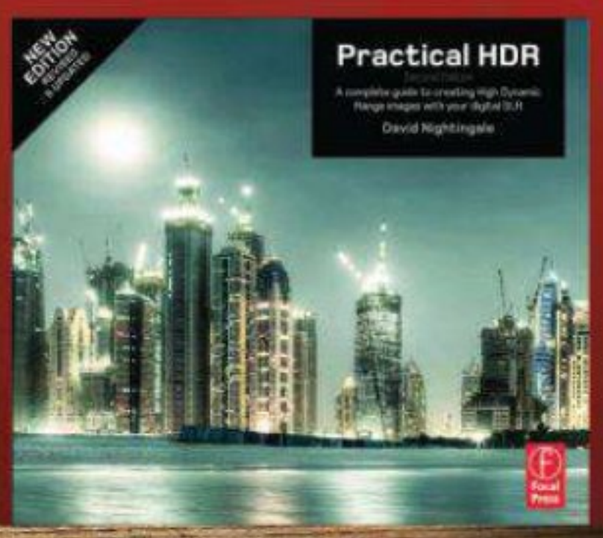

By David Nightingale
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Completely updated with the latest techniques and technologies in HDR, providing you with an abundance of step-by-step examples.

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If you have ever photographed a high-contrast scene, you know that even the best exposure will typically have blown out highlights and flat shadows. The solution to this problem is High Dynamic Range (HDR) processing. Take three or more photos at varying exposure levels and load them into Photomatix software for merging into HDR. The resulting image reveals highlight and shadow details and you may further adjust it to your liking. Various settings and one-click presets let you get the look you want, from natural-looking to painterly, surreal or ultra-realistic effects. **Make every image capture your vision with Photomatix.**

Old Man of Storr photo © Maciej Duczynski

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Best Gear Now

Text by Dan Richards
Photos by Travis Rathbone

All year, we put photo gear through its paces: we test it, use it, manhandle it. When we're through, we make a list of the top items we've tried and tested. Then we cross off most of the list. The remaining items receive top honors: The POP Award for Photography's Outstanding Products. Here's what made the cut in 2012.

POPULAR PHOTOGRAPHY
POP AWARDS 2012
PHOTOGRAPHY'S OUTSTANDING PRODUCTS

LOOKS SHARP, SHOOTS SHARP

Olympus OM-D EM-5

The OM-D nicely reprises the jewelike looks of Olympus's legendary OM-series of compact 35mm SLRS. We're pleased to report that the OM-D's performance in lab and field tests was also evocative of the OM film cameras. It tested with Excellent overall image quality in the Pop Photo lab and earned kudos from every tester for its rugged, weather-sealed body and fine handling. While it may look very much like a little pro DSLR, the OM-D is actually an interchangeable-lens compact with an electronic viewfinder in place of a prism finder. It accepts lenses from the growing Micro Four Thirds optical catalog, plus a neat accessory vertical grip. ***$999, street, body only***

POPULAR PHOTOGRAPHY

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PHOTOGRAPHY'S OUTSTANDING PRODUCTS

COLORFUL PANEL DISCUSSION

iKan IB500 Dual Color LED STUDIO LIGHT

Blown fuses from hot lights causing you to blow a fuse? It may be time to try an LED light panel, and this 500-watt iKan unit is one of the most flexible around. Continuously dimmable output and adjustable color temps (3200–5600K) can be set via the rear touch screen or remote control. It can be powered by optional batteries and stand-mounted horizontally or vertically, and its barn doors are built-in. It's also heavy (nearly 6 lbs.), but the all-metal unit is durably made. ***$475, street***

FIENDISHLY FAST FOCUS

Sony Alpha 99

It's getting to be almost *de rigueur* for Sony to change the technology landscape. This time, it created the first full-frame DSLR using a fixed transmissive mirror. And that's not the 24MP Alpha 99's only innovation: Its Dual Hybrid AF system uses phase detection and contrast detection on the image sensor for almost scary-fast AF and tracking during video and live view. A range-limiter system lets you restrict AF to a settable fore-and-aft depth. And an array of fancy video accessories—including a hot-shoe mount mic with symmetrical stereo inputs—boosts the 1920x1080p60 video capability to near-pro levels. ***$2,798, street, body only***

LONG, FAST ONE

Sigma 180mm F/2.8 APO MACRO EX DG OS HSM

When we wrote up the test report for this massive macro lens, we griped that it was big, heavy, and expensive. We also said it was well worth the bulk, weight, and cost. Its excellent optical performance across all criteria—it actually performs even better when focusing in the macro range—and superb weather-sealed construction should have serious nature shooters lining up to buy this lens. ***$1,699, street***

LUKE SKYWALKER'S LED

Westcott Ice Light

No, it's not a light saber, but an LED light wand powered by rechargeable battery. At 20 inches long and 1.3 lb., it's easily handheld for quick localized fill lighting, and can be stand-mounted. It's daylight-balanced (5300–5400K), fully dimmable, and includes gel clips for color balancing acetate filters. It can work continuously at high power for 60 minutes on one charge. Keep in mind, though, that even at max output, the Ice Light is dim (equivalent to a 150-watt tungsten source), so in most cases, it won't be suitable as a main light. ***$500, street***

RESOLUTION MONSTER

Nikon D800

With the highest resolution we've yet tested in a DSLR (more than 3500 lines), uncompressed HD video out, and a well-designed, customizable control system, the 36.3MP D800 sets the performance bar for prosumer DSLRs several notches higher. And we're glad Nikon wasn't embarrassed to put an "amateur" pop-up flash on the D800—it lets you control multiple TTL flash units wirelessly. Big pixel counts, though, make for big file sizes (you'll need more card and backup storage), and smaller pixels mean images noise up more at high ISOs than in competitive models. ***$3,000, street, body only***

MULTI TASKER

Really Right Stuff WPF-QR2 FLASH BRACKET

With DSLR video gaining in popularity, photographers are looking to attach more and more stuff to their cameras. This RRS flat-folding bracket can be tricked out with various accessory extensions to hold a mic, LED light, audio recorder, and off-camera LCD screen—simultaneously. Oh, it can hold a flash, too. ***$240, direct***

A STRAIGHTENER OUTER

DxO ViewPoint

Bugged by that edge distortion (anamorphosis) at the sides of your wide-angle photos? DxO's new software uses its lens know-how to fix that, as well as keystoning and tilted horizons, recropping as needed and showing you side-by-side before and after versions. Works as a standalone or a plug-in for Adobe Photoshop or Lightroom. ***$79, direct***

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TOUCHING ABILITY

Wacom Intuos5

TABLET Wacom's top-of-the-line pro model works with both pen and fingers, so you can alternate between using the pen and multi-finger touch gestures. Available in small, medium, and large sizes, its 2,048 levels of pressure sensitivity make it practically essential for fine retouching. You can configure ExpressKeys to minimize use of your computer keyboard for retouching, and a $39 kit will convert it to wireless. ***$210 to $434, street, according to size***

PRIME PANCAKE

Canon 40mm

F/2.8 EF STM While this may be the smallest full-frame AF lens, its real claim to glory is that it is one of the first two Canon lenses with a stepping AF motor, allowing truly silent autofocus during video. It enables smooth Movie Servo AF with the newest Canon DSLRs. Optically strong, too, with excellent SQF numbers combined with negligible distortion and light falloff. And the price is right. ***$199, street***

TWO FINDERS IN ONE

Fujifilm X-Pro1

For all those photographers who have pined for an interchangeable-lens digital camera with classic lines and traditional dial-and-ring controls (and who aren't quite ready to drop $7,000 or so for an M-series Leica), may we please present the X-Pro1? Its classic looks combine with technological showstoppers, such as the hybrid viewfinder that can switch from an EVF to a bright-frame optical finder with full information overlays. The 16.3MP APS-C-size sensor delivered 2400 lines of resolution, just shy of an Excellent rating. (We're anticipating Fujifilm making refinements to the sensor, which uses a unique pixel array and foregoes a low-pass filter.) Exposure controls are utterly and delightfully logical. ***$1,699, street, body only***

BACON SAVER

Drobo Mini

This superfast portable RAID drive is for serious shooters who can't risk losing their images while on the road. It uses both USB 3.0 and Thunderbolt connectors, and even comes with its own Thunderbolt cable. It can hold four hot-swappable 2.5-inch drives, plus an SSD (in its own slot on the bottom) to help speed up your data. ***$649, street, drives not included***

SMARTEST SLAVES

PocketWizard

PLUS III Another product that dominates its market becase it's the best out there. The Plus III can operate either as a transmitter or receiver, automatically assuming either role depending on how the remote unit is set. The new version mounts sideways for a thinner profile that's less likely to block your view, and has 32 channels and four zones that let you turn flashes on or off from the camera. The backlit LCD panel is easy to navigate and read, and the antenna is housed internally, so it can't snag on anything. ***$149, street***

UN-CAMERA BAG

Timbuk2 Sleuth

BACKPACK Pop Photo editors are fans of this pack because it has room for a camera body, a flash, a lens (or two), and a real laptop, not just a tablet. Daypack styling doesn't advertise that you're carrying camera gear. Back padding has effective venting, straps are comfortable, zippers are sturdy, and the nylon is splash-resistant. A big camera with a battery grip will be a really tight squeeze, though. ***$139, direct***

POPULAR PHOTOGRAPHY

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PHOTOGRAPHY'S OUTSTANDING PRODUCTS

WORKHORSE III

Canon EOS 5D MARK III

When we named the first-generation 5D our Camera of the Year in 2005, we had more than an inkling that this first "affordable" full-frame DSLR would prove a workhorse for both pros and amateur enthusiasts. With the Mark III, the 5D becomes the workhorse that acts like a thoroughbred. The newest version speeds up to 6 fps bursts (from the 3.9 fps of the Mark II), quadruples ISO sensitivity to 102,400 (from 25,600), and speeds up autofocus considerably from that of its predecessor. Its noise control is awesome: It was rated Low in our lab tests at ISO 12,800, and was still acceptable at ISO 25,600. Video capture is exceptional, and the fit, finish, and sealing of the solid body cannot be faulted. ***$3,459, street, body only***

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A STEADY FIRST

Tamron 24–70MM

F/2.8 DI VC USD This a lens that "couldn't be done," a 24–70mm f/2.8 constant-aperture zoom with image stabilization. But Tamron did it, and so, despite some optical flaws, it well deserves a POP Award. The not-so-hots: Visible barrel distortion at 24mm, and persistent light falloff at every aperture at 24mm. But the lens proved sharp throughout the focal length range in our SQF tests, and the VC proved very effective. ***$1,299, street***

BRIGHT-EYED TELE

Samsung 85MM

F/1.4 With its Excellent SQF scores, virtually nonexistent distortion, and no—repeat, *no*—light falloff at any aperture, this superfast tele ranks as the most awesome optic Samsung has yet produced for its NX series of ILCs, and may help draw serious shooters to the marque. It's big, heavy, and expensive, but that comes with the territory for super optics like this. ***$999, street***

HIGH-CLASS GLASS

Carl Zeiss 25MM

F/2 DISTAGON T* ZE

Still photographers owe a great debt to video enthusiasts, for whom companies like the venerable Carl Zeiss make super-quality manual-focus lenses. While videographers will appreciate the silent, smooth, precise focusing action, still shooters will dig the fine optical quality our lab found across all criteria. Both will love the creamy defocus at f/2. ***$1,699, street***

SUPER KIT ZOOM

Nikon 24–85MM

F/3.5–4.5 AF-S VR

An affordable alternative to the pricey, fast 24–70mm f/2.8G, this full-framer proved a sharp shooter in our lab tests (see page 100 for the full report), although distortion was a little higher than we'd like. Nikon's stalwart Vibration Reduction II has automatic tripod detection, and, in this lens, can provide VR optimized specifically for video. ***$597, street***

ONE CRAZY BABY

Lensbaby

EDGE 80 OPTIC Call it the poor man's (or woman's) tilt lens. An 80mm f/2.8 with apertures to f/22, it can be fitted to any of the the Lensbaby bendable bodies (Composer, Muse, etc.) for use on any film or digital SLR. As a flat-field lens, it behaves normally when aimed straight ahead, but depending on tilt, it can dramatically decrease or increase apparent depth of field. ***$300, street***

TOP STARTER DSLR

Nikon D3200

This year it was Nikon's turn to stretch the term "entry-level" the length of the continental divide. A whopping 24.2 megapixels produced the highest resolution we've seen yet in a sub-$1,000 camera. The D3200 held noise to acceptable levels through ISO 1600, and showed Excellent color accuracy. Video capture is a full 1920x1080p30, and burst shooting is 4 fps—pretty good for this class. Controls are annoyingly menu-centric, and there's only one command wheel, but at this price, it's hard to complain. ***$697, street, with 18–55mm f/3.5–5.6G AF-S Nikkor VR lens***

EASY WIDER

Tokina 17-35MM

F/4 AT-X PRO FX Tokina's version of the constant-aperture wide-angle zoom carries a price about $150 to $500 less than comparable zooms from camera makers. But that's not the only reason to commend this full-framer: It put up very solid numbers across all our lab tests—in fact, beating the more expensive optics in several criteria. Fit and finish are excellent, and it has good weather sealing, too. ***$669, street***

THE I'S HAVE IT

iPhoto for iPad

A neat little app that lets your fingers do the edits on your photos. Drag a digit up or down on your iPad's screen to increase or decrease, say, exposure or saturation, or use your finger to brush on fixes such as sharpening. You can also apply a bunch of effects, share directly to Facebook or Twitter, and flag your favorites. ***$4.99, direct***

GO OFF THE WALL

Sunbounce

BOUNCE-WALL No wall to bounce your flash off of? Or the wall that's there is some weird color? Bring your own wall with you with this lightweight bracket arm that mounts to your camera's tripod socket and holds bounce reflectors of various colors and spectral qualities. Only one reflector is included, though. *Boo!* Still, this is a neat gadget. ***$134, street***

NEW CARD TRICK

Sony XQD Card

AND READER This new standard in memory card format has a spec allowing for much higher throughput than with a standard CF or SD card—which will be beneficial as DSLR video capabilities advance. So far, only the new Nikon D4 supports it, and SanDisk is backing another standard. We shall see. ***Reader, $45, street; cards from $130***

FASHION PLATE

Litepanels Croma

SHOE-MOUNT LED LIGHT

Let's face it: Most LED panels are utilitarian-looking, if not outright ugly. The Croma bucks the trend with its Jetsons styling. This shoe-mounter (via built-in ballhead) provides light with continuously variable color temps of 3200–5600K, and can be powered by 6 AA batteries or AC current. It's relatively dim, though, so stay close to your subject. ***$584, street***

THE NON-KIT LENS

Sony 16–55MM F/2.8 DT SSM

While we love 18–55mm kit lenses for the optical quality they provide for the price, they are slow, feel plasticky, and focus noisily. This beauty, designed for Sony APS-C bodies (it is a 24–75mm equivalent), has a fast f/2.8 constant aperture, lovely metal construction, and very strong optical performance with the exception of a little more distortion at 16mm than we'd like. Manual focus is smooth and precise, and autofocus on bodies such as the Alpha 77 body is virtually silent. ***$798, street***

A GEM FOR POST

Adobe Photoshop Lightroom 4

The latest Lightroom may put your copy of Photoshop in cold storage. It adds Curves adjustments—in RAW—and more targeted fixes, such as one for selective white balance. New RAW processing recovers more shadow and highlight detail than ever before. For printing, it allows soft proofing. ***$149, direct***

SEND MORE SUPERLATIVES

Canon EOS Rebel T4i

That's right—it's The Best Rebel Ever! We keep trying to retire that headline, but Canon just won't let us. This latest Best Ever wowed us with Excellent overall Image Quality, noise kept to acceptable levels through ISO 12,800—quite a feat—and fast, sensitive AF. For moviemakers, this Reb gives you virtually the same video capabilities as Canon's EOS 5D Mark III, including stereo mic input with audio levels adjustable in the camera. Plus a trick the 5D doesn't have: Hybrid AF, using phase-detection points on the sensor, that provides smooth continuous AF during video shooting. We wonder what they'll do with the T5i... ***$842, street, with 18–55mm f/3.5–5.6 EF-S IS II lens***

MICRO 4/3 MASTERPIECE

Panasonic Lumix GX1

The sole rangefinder-style Micro Four Thirds ILC to garner an Excellent image quality rating to date, the GX1 also wooed us with its user-friendly personality. Panasonic's touchscreen and touch controls could convert even confirmed touchscreen haters. The unconverted will happily make do with the GX1's many-buttoned, logical exterior controls. Images get noisy at ISO 1600 and above, and the body lacks an eye-level finder, although you can opt for a shoe-mount EVF. ***$469, body only***

HANDHELD STUDIO

Lastolight Brolly

GRIP Yep, this is exactly what it looks like: an umbrella handle with a flash shoe and a socket for an umbrella shaft. A tad silly, perhaps, but it lets an unassisted photographer handhold an umbrella for on-the-run portrait or product-shot illumination. For the weak of wrist, there's a standard lightstand socket in its base. The kit includes a 20-inch shoot-through umbrella. ***$49, street***

SHOULDER HOLDER

Vanguard Xcenior SERIES SHOULDER BAG

Available in three sizes, even the smallest Xcenior has a laptop sleeve and tripod harness. Plus shock-absorbing feet, a reverse-opening lid for easy access to contents, and a trolley sleeve that zips both top and bottom to become an additional pocket. ***$220–300, street, depending on size***

POPULAR PHOTOGRAPHY

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A SPECIAL K

Pentax K-30

The K-30 is a worthy heir to the Pentax tradition of tough but user-friendly SLRs. The 16MP camera is loaded with weather seals typical of more expensive bodies, has a glass pentaprism rather than a pentamirror, and an impressive-for-its-class 6 fps burst rate. Not to mention Excellent tested image quality, and compatibility with the literally millions of K-mount lenses sold since 1975. ***$847, street, body only***

A NEW SLANT

Novoflex VR SYSTEM SLANT TRIPOD HEAD

Designed for the most efficient production of 360-degree spherical panoramas with a 180-degree fisheye lens, this head tilts the camera and lens at 60 degrees so that the the sensor's diagonal length is deployed vertically. This lets you capture a full-field 360-degree virtual-tour view in as few as three overlapping exposures. ***$427, street***

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BOSTON, MA	JUNE 9-10
ATLANTA, GA	JULY 7-8
SEATTLE, WA	JULY 28-29
MINNEAPOLIS, MN	AUGUST 4-5
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LITTLE ROCK, AR	AUGUST 25-26
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Share the Joy

By Peter Kolonia

RYAN GIBSON

PRINTING MATTERS Avoid unpleasant surprises and vet your printer before ordering cards. Ryan Gibson, who shot the family scene here, recommends Miller's Pro Lab of Kansas and Missouri for its paper surface options and print quality. Jeff Harris, whose 2011 cookie card you see below, warns, "One year we used a discount online printer. Never again!"

Want to make your own brilliant holiday card this season? Our panel of pros shows you how to avoid ho-hum on your way to ho ho ho!

PHOTOGRAPHERS HAVE the tools to make holiday cards that inspire awe, envy, and, of course, merriment in friends and family. Want to try creating one? Fear not; there's still time to do it this year. To help you get the project off the ground, we sought advice from a handful of pros whose DIY cards both tickled and moved us. Some make them as marketing projects for clients, others for loved ones. But from both perspectives, these seasoned pros have a stocking full of tips to get you on your way.

First and foremost, our panel agrees, a holiday card for most families is a clan portrait. While a simple warm-and-fuzzy group shot can suffice, consider ramping up your card by packing it full of as many strange, fun, and true details as you can. Such little things bring humor to the card and bring out the personality of each family member.

PICK AN EVERGREEN Concepts that can be reused each season mean you don't have to start from scratch every year. Edgar Artiga's pet portrait, Kyle Dreier's study in chocolate, and John Neitzel's Rock Center theme are all reinterpreted each year. For an ironic approach, such as Brad Trent's "Humbug" card, make sure you know your audience.

For the photograph across our opening spread, pro Ryan Gibson (ryangibsonphoto.com) recalls, "We spent a lot of time on the details, from the placement of Mom's slippers to the facial expressions of each child. Telling detail creates impact."

Such details can include characteristic clothing, facial expressions, body language, interaction, and background locations or props that give the card's recipients more to look at and enjoy. It's by these details that they can recognize your family and savor jokes and color that only insiders will catch.

By enlisting the help of the entire family, the card will ultimately benefit, and the project itself can make for family fun. Kent Phillips, a photographer for Disney in Orlando, FL, says, "I've noticed I tend to get better cooperation from my kids when they understand the concept. One year, I figured there was no way I'd convince them to dress up as elves, but when they found out they were going to be throwing coal at oil executives, they were all onboard. It's a lot more fun making these cards when the entire family gets behind them."

For Phillips, humor is important; he finds that taking advantage of the card format helps incorporate it. "My cards are designed as typical, folding cards, and normally have a visual set-up on the cover and a punch line photo inside." One year, the card's cover depicted the family shivering behind a snowdrift. You open the card to see that the drift was actually a constructed set at a miniature golf course in sunny Orlando.

CONTINUES ON PAGE 134

EDGAR ARTIGA/WONDERFUL MACHINE (DOG); BRAD TRENT (PORTRAIT); KYLE DREIER (WREATH); JOHN NEITZEL (ROCKEFELLER CENTER)

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The all new Sunpak DigiFlash 3000.

A brighter idea for your DSLR camera.

The all new Sunpak DigiFlash for DSLR cameras offers all the power you need with the features professional photographers demand. With complete TTL compatibility for Canon or Nikon DSLR cameras, the DigiFlash 3000 is perfect for portraits, groups, sporting events and stage productions. With more flash power than your DSLR's built-in flash, you can now capture spectacular shots using longer zoom lenses, with stunning results. And no more running out of flash power when you need it.

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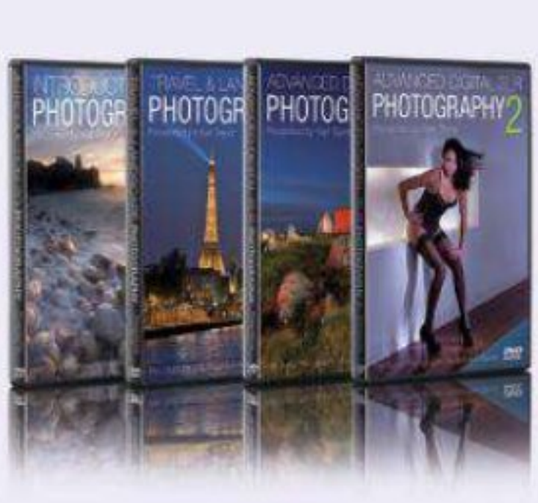

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AUTHORITATIVE TESTS, REVIEWS, AND BUYING ADVICE

SIGMA DP2 MERRILL COMPACT USES THE BIG FOVEON DSLR SENSOR
92

NIKON 24–85MM F/3.5–4.5G AF-S ED VR: A FULL-FRAME KIT LENS
100

NIKON D600

- 24.3MP full-frame CMOS sensor
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DSLR TEST

FULL FILLING

Nikon makes "bargain full-framer" less of an oxymoron

TRAVIS RATHBONE

A FULL-FRAME DSLR body has long been on the wish lists of many more photographers than could afford one. Now, both Nikon and Canon have announced cameras priced at about $2,100 (street, body only), pitching them as "low-cost" full-framers.

The first of these to come into our hands is the 24.3MP Nikon D600. While it does indeed feel less like the luxury experience of Nikon's D800, it's more like a Mini Cooper than a Hyundai Accent—high-performing with a bit of flair. In terms of its looks, many see a strong resemblance between the new camera and the Nikon D7000.

But when we ran the D600 through the Popular Photography Test Lab, we

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AMATEUR PRO

quickly discovered where the D600 surpasses the performance of the D7000 by a considerable margin.

In the Test Lab

The D600's imaging proved well above economy class, with an Excellent rating in overall image quality in our tests from ISO 50 through ISO 3200. Its resolution was particularly impressive: 2930 lines per picture height at its lowest sensitivity of ISO 50.

Furthermore, resolution didn't drop below our threshold of 2500 lines until its top ISO of 25,600 (Nikon calls this Hi 2). At ISO 12,800 (a.k.a. Hi 1), the D600 served up 2570 lines. At both of those settings, of course, noise was heavy enough to drop image quality ratings well below the floor for an Excellent rating.

In our color accuracy test, performed with DxO Analyzer 4.1, the D600 easily earned an Excellent rating with an average Delta E of 6.8.

Interestingly enough, the much pricier Canon EOS-1D X and Nikon D4 both peaked at 2530 lines at ISO 50 in our tests. These top-of-the-line DSLRs also sport fewer pixels, faster bursts, and are built to withstand circumstances that might prove devastating to cameras in the class of the D600. But it's nice to know that you can get more resolving power from a camera that costs thousands less than those pro rigs.

And if you thought that the D600 might not be able to keep up with those two supercameras when it comes to controlling noise, think again. The D600 matches the 1D X

NIKON D600

WHAT'S HOT

Excellent image quality through ISO 3200.

WHAT'S NOT

AF not as fast or sensitive as we'd like.

WHO IT'S FOR

Those looking for the Holy Grail of a lower-price/high-performance, full-frame body.

LINZEE LICHTMAN (LCD IMAGE)

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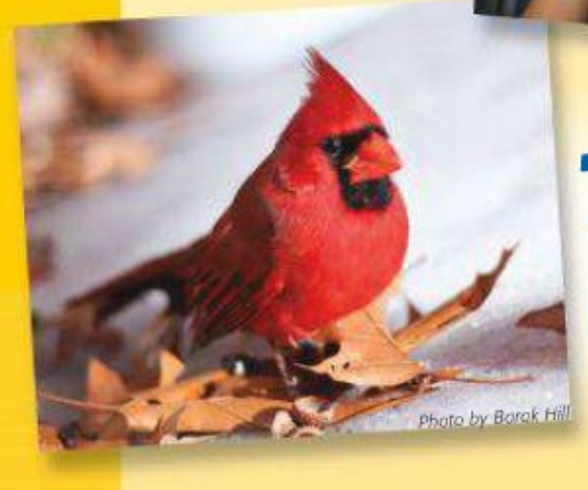

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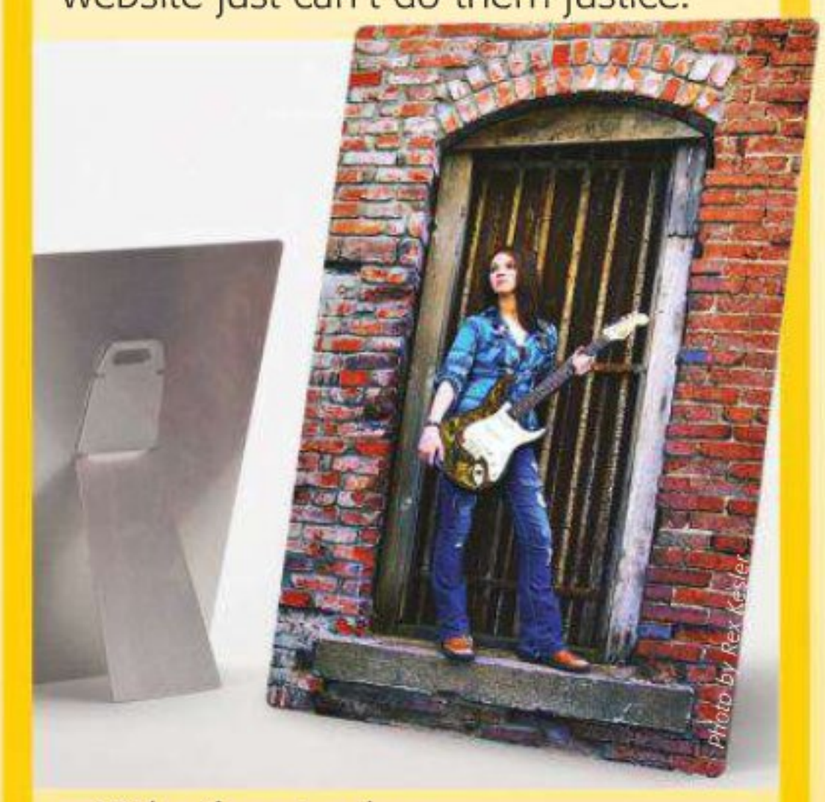

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and D4 in keeping noise to Low or better ratings all the way up to ISO 3200. All three cameras also reach Unacceptable noise levels at ISO 12,800 and above. And while the two pro bodies reach the stratospheric ISO 204,800, we think that the D600's top ISO of 25,600 is enough for most shooters—amateur through pro.

The main area that the D600 fails to match more-expensive cameras is autofocus. The 39-point system in the D600 covers a decent amount of the frame, but is rated to work down to only EV –1. And indeed, the D600 gave up completely in our test when the light went below EV –1. Even there, we found more variability in AF speed than we'd like to see: While it averaged 1.27 seconds, in some instances AF time came close to 2 seconds.

At the brightest light level in our test (EV 12), the D600 focused in a less-than-speedy 0.48 second. By EV 6, that had slowed to 0.54 second, which, while not bad, is still behind the 0.49 second that Nikon's own D7000 managed at that same light level.

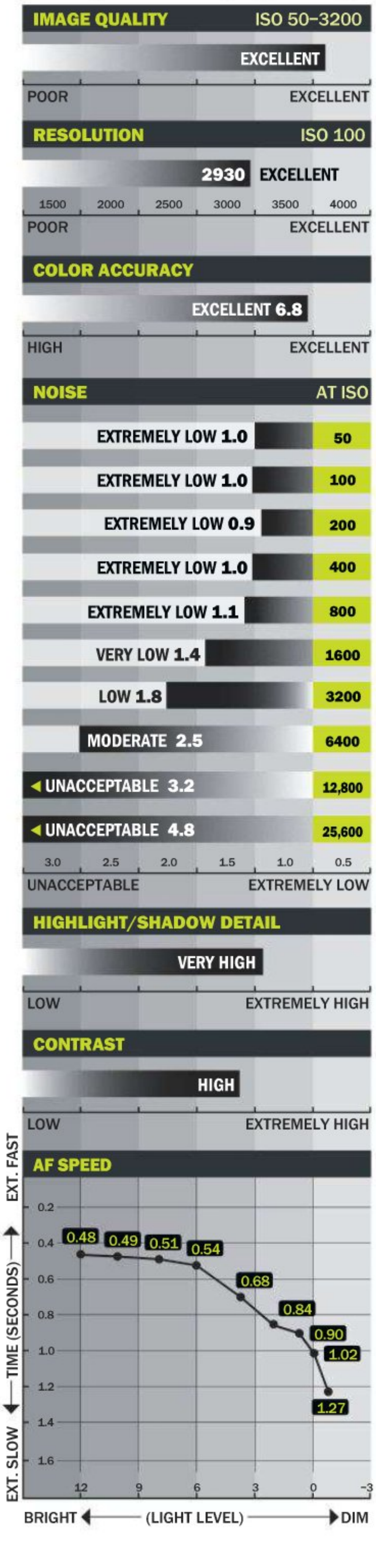
Despite all the fuss we're making here, in our opinion it's better to sacrifice a little bit of AF speed to hit a lower price at retail than to skimp on the image quality. All in all, the D600 really impressed us in our lab tests.

CONTINUES ON PAGE 126

No need to fret about running out of card space: The D600's two SDXC-compatible SD card slots allow for up to 256GB of storage.

Nikon pros looking to add a backup full-frame body have a wonderful option in the D600.

TEST RESULTS



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Color Kid

SIGMA PUTS ITS BIGGEST SENSOR IN ITS SMALLEST BODY

WHILE MOST photographers think of Sigma as a lens maker, the company makes some genuinely unique cameras. Case in point: the Sigma DP2 Merrill ($1,000, street), a compact camera with a fixed 45mm-equivalent (30mm actual) f/2.8 lens and a 46MP (15.3MP for each color channel) Foveon X3 imaging sensor.

This chip, used only in Sigma cameras, has three layers of pixels, one each for the red, green, and blue color channels, whereas traditional CCD and CMOS sensors scatter the three colors of pixels in a single layer, usually in a pattern called a Bayer array. What difference does this make? We'll explain in looking at the results of our testing.

In the Test Lab

In addition to the unique way Foveon sensors capture color information, they also have the distinction of not including an anti-aliasing filter in the optical path. While this has become somewhat fashionable among DSLR manufacturers that are trying to court videographers, it can cause issues in still capture. And this leads to an odd scenario in our test lab.

For our resolution test, we shoot a target with a pattern of lines that become ever more

SIGMA DP2 MERRILL
WHAT'S HOT
Great image quality for a true compact.
WHAT'S NOT
You could get a DSLR and lens for the $.
WHO IT'S FOR
Serious shooters who want a serious pocket camera; Foveon cultists.

PHILIP RYAN (LCD IMAGE)

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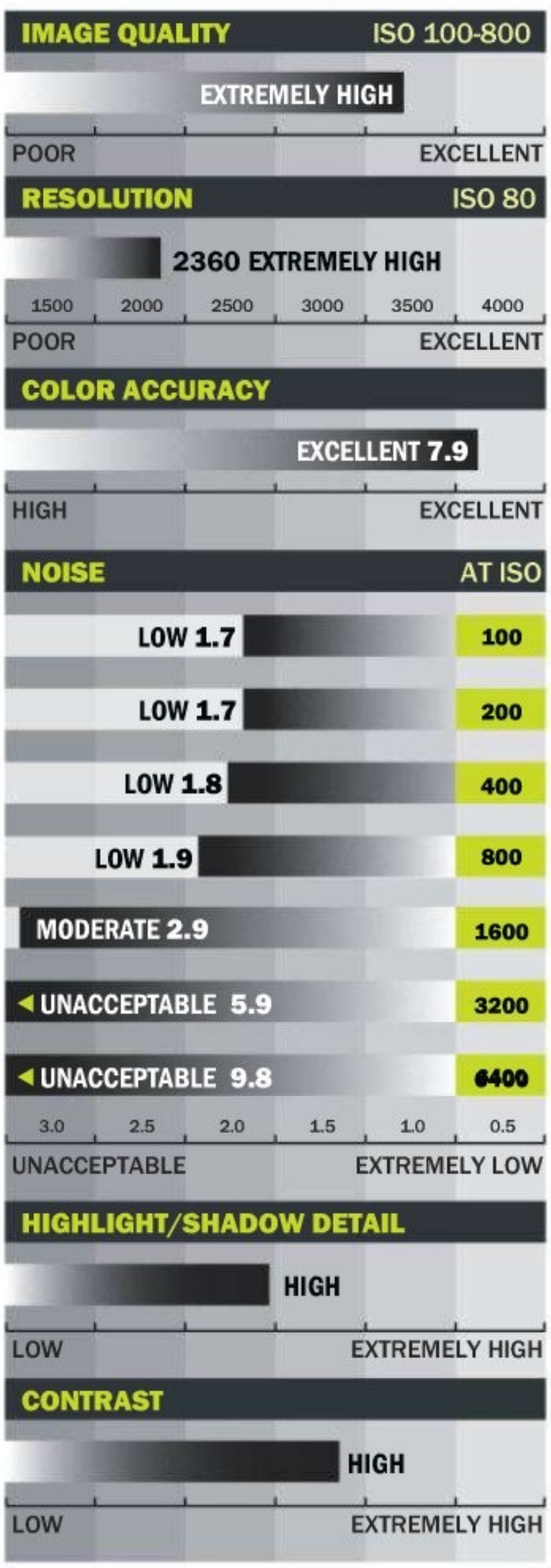
densely packed together. We then determine the point at which any of the lines are no longer properly distinguishable from its neighbors. This tells us how many lines the camera and lens combination can resolve in the height of one image. The problem is that the Foveon system—having no anti-aliasing filter—produces spatial aliasing, a phenomenon that sometimes manifests itself as a moiré pattern. So, given our strict reading of our resolution chart, the area in which aliasing makes the lines indistinguishable is where we must mark the end of the camera's resolving power, though some detail beyond that is discernable.

In our test, we measured 2360 lines per picture height—about what you might expect from a conventional 16MP Bayer-array sensor, and about the same that we measured when we tested the Sigma SD1 DSLR in the November 2011 issue. In real-world shooting, you can expect more detail than our test might indicate—precisely how much is difficult to quantify, and, we don't think it would be appropriate to change our test standards for this unique scenario.

Another important factor to keep in mind: It really pays to shoot RAW with any of Sigma's cameras. You will get better noise results and potentially better resolving power if you take the time to do a good RAW conversion on your files rather than relying on JPEG capture. While this is true of most cameras, it is more so with any of Sigma's. We always deliver our official test results based on RAW images converted to uncompressed TIFFs with the manufacturer's supplied conversion software.

Strangely, although Sigma's software doesn't seem to vary the amount of noise reduction applied as the ISO increases, the DP2 Merrill earned a Low rating from ISO 100 through ISO 800 before becoming significantly more noisy (we would have expected more noise with noise reduction staying the same). At ISO 1600, noise got a Moderate rating, and thereafter reached Unacceptable levels. If those

TEST RESULTS



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scores seem underwhelming, remember that this is a compact camera. Such noise and resolution scores are really impressive for a camera of this size.

The DP2 Merrill earned an Excellent rating in our color accuracy test with an average Delta E of 7.9, just below the cutoff for that rating. This makes it noticeably more accurate than most color-negative films. So, for those photographers who want to replicate the film-shooting experience, the DP2 Merrill can serve up the silky smooth transitions between colors that many people love about film, while capturing more accurately.

For info on how we test DSLRs, go to PopPhoto.com/reviews.

In the Field

Though the first word that comes to mind when seeing the DP2 is "flat," don't let this deter you. A smattering of raised dots on the front of the camera are surprisingly effective as a grip. At first we were confused when hunting for exposure compensation, but we quickly realized that the left and right buttons used to navigate the menus provide negative and positive compensation, respectively.

Most of the settings you might change while shooting are in the dual quick menus. Press the quick menu once and you access the first one's four

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BURST RATE: Full-sized JPEGs (Fine mode), up to 7 shots at 4 fps; RAW up to 7 shots at 4 fps; RAW + JPEG up to 7 shots at 4fps.

AF SYSTEM: TTL contrast detection with 9 selectable focusing points; single-shot and continuous AF.

SHUTTER SPEEDS: 1/2000 to 30 sec, plus B (1/3-EV increments).

METERING: TTL metering with 256-zone evaluative, centerweighted, and spot (size of spot unspecified).

ISO RANGE: 100–6400 in 1-EV increments.

VIDEO: Records at 640x480 pixel resolution at 30 fps as an AVI file; built-in monaural microphone; no microphone input.

FLASH: No built-in pop-up flash; hot shoe accepts Sigma accessory flashes.

LENS: 30mm (45mm full-frame equivalent) f/2.8 fixed focal length lens.

LCD: 3-in. TFT with 920,000-dot resolution; seven-step brightness adjustment.

OUTPUT: USB 2.0, composite video, and analog audio.

BATTERY: Rechargeable BP-41 Li-ion, CIPA rating 97 shots.

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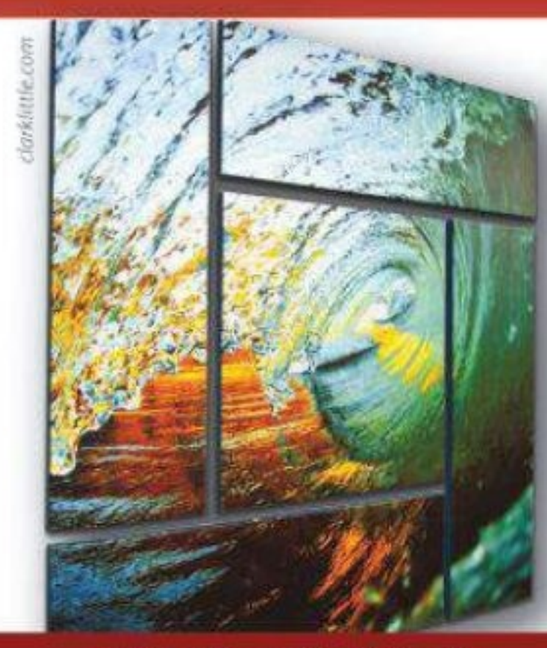

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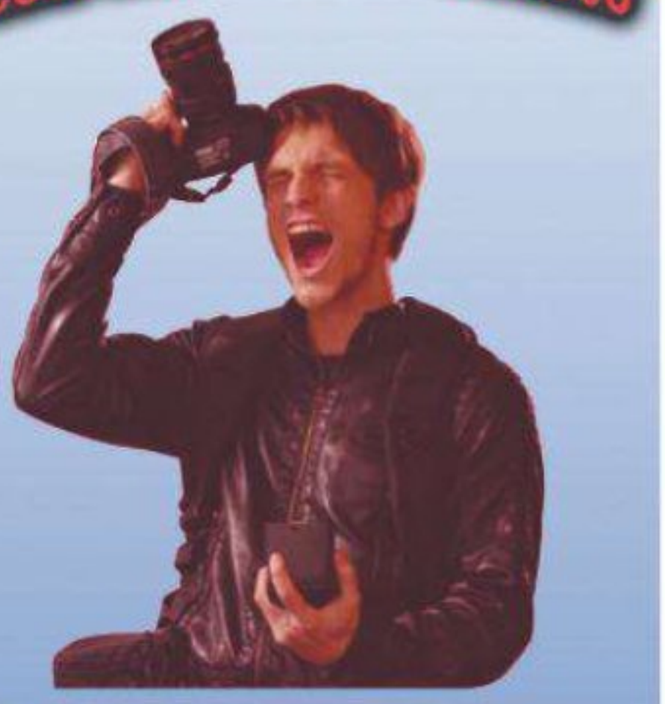
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settings, press again and you get four more settings. Since you can use the command wheel to change the settings, you can move from ISO 100 to ISO 6400 with one button press followed by one long quick flick of the wheel.

As with interchangeable-lens compacts, the manual focusing ring doesn't move helicals inside the lens—instead, it operates as a controller, and the lens elements are moved electronically. We found this to be responsive and dialed in our own focus when we didn't need the speed of autofocus.

Given that this camera targets people who will practice very deliberate, well-thought-out photography, it's a tad surprising that the DP2 Merrill allows bursts of 4 frames per second. You won't be able to burst for all that long, given that the buffer can hold up to only seven shots, regardless of whether you're capturing JPEGs, RAW, or RAW+JPEG.

Unlike Sigma's DSLRs, both of its DP-series compacts can capture video at up to 640x480 pixels at 30 fps. While not nearly as impressive as the 1080p that you can get from many cameras, we don't think that will be a problem for the photographers who will gravitate toward the DP2 Merrill. This is, after all, much more of a still shooter's camera.

If you do decide to capture some video, you likely won't be disappointed. But, you likely won't end up using it for anything other than YouTube given the size of the capture. On the plus side, we didn't see any excessive artifacts in the footage we captured and the clips were pleasingly sharp.

If you like to go out for extended shoots, you should definitely consider getting a second, or maybe even a third, battery for the DP2 Merrill. Sigma rates the battery life at 95 shots per charge. We had a second battery at our disposal during field testing, and ended up relying on it many times.

The Bottom Line

While the Sigma DP2 Merrill doesn't come cheap—for the same price you could certainly get a DSLR or ILC, plus a nice prime lens to go with it—the images it delivers can be downright stunning. And while our lab tests don't necessarily show it, in many circumstances the images from this little camera will deliver extremely fine detail with a very pleasing overall look that some shooters feel can't be matched by other, more traditional, sensors.

If the 45mm-equvalent lens is not wide enough for you, consider Sigma's DP1 Merrill, whose lens covers an equivalent of 28.5mm, with an actual focal length of 19mm. We received a test sample of the DP1 shortly before our deadline for this issue and will look to provide test data in the coming months on PopPhoto.com. But, given the vast similarity between these two models, we don't expect to see much difference in image quality outside of the differences inherent in the lenses—you can likely expect slightly more distortion from the wider-angle DP1. (For street photographers, the DP1 would likely make more sense than the DP2, though that's certainly a personal decision.)

Either way, with the images we got from the DP2 Merrill, we think that the decision to buy either of these cameras is one that you should, at the very least, consider. ***—Philip Ryan***

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AMATEUR PRO

Tool Kit

ALL-PURPOSE FULL-FRAME ZOOM WITH VR

LAUNCHED IN June 2012 and now a kit lens for the Nikon D600, this full-frame 24–85mm f/3.5–4.5G AF-S ED VR ($597, street) is Nikon's third version of its 24–85mm lens and the first with Vibration Reduction. It has one element of expensive low-dispersion (ED) glass, three aspherical elements, a weather-resistant O-ring around the lensmount, Nikon's SWM autofocus motor, and the M/A "manual-priority" mode that allows for manual-focus touchup when the lens is set to autofocus.

The build is excellent, the surfacing attractive, and turning actions for the focus and zoom rings are smooth, even, and slop-free. AF? Quiet, accurate, and fast. Weighing just over a pound, the lens is light and fairly compact. (It casts a shadow from the D600's pop-up flash only at the widest focal length and closest subject distance.) Its nonrotating barrel takes 72mm filter-ring accessories.

On our optical test bench, it delivered Excellent-range SQF numbers for sharp and contrasty images. (Oddly, its numbers averaged slightly below those of the previous 24–85mm AF Nikkor.) In our DxO Analyzer 4.1 tests, it produced Visible-range distortion at all three tested focal lengths

CONTINUES ON PAGE 124

DAN BRACAGLIA

NIKON AF-S 24–85MM F/3.5–4.5G ED VR

WHAT'S HOT

Sharp, compact, well-built.

WHAT'S NOT

Disappointingly high distortion.

WHO IT'S FOR

Any Nikon shooter in the market for a step-up utility zoom.

SPECIFICATIONS

24–85MM (24.75–84.98mm tested), f/3.5–4.5 (f/3.18–4.76 tested), 16 elements in 11 groups. Focus ring turns 130 degrees. Zoom ring turns 70 degrees. Focal lengths marked at 24-, 35-, 50-, 70-, and 85mm.
DIAGONAL VIEW ANGLE: 84–28°.
WEIGHT: 1.09 lbs. **FILTER SIZE:** 72mm.
MOUNTS: Nikon AF.
INCLUDED: Lenshood, case.
STREET PRICE: $597.
WEBSITE: nikonusa.com

TEST RESULTS

DISTORTION: At 24mm, 0.61% (Visible) barrel. At 50mm, 0.44% (Visible) pincushion. At 85mm, 0.46% (Visible) pincushion.
LIGHT FALLOFF: At 24mm, gone by f/5.6. At 50mm, none. At 85mm, gone by f/5.6.
CLOSE-FOCUSING DISTANCE: 12.91 inches.
MAXIMUM MAGNIFICATION RATIO: At 24mm, 1:9.29. At 50mm, 1:5.20. At 85mm, 1:3.63.
IMAGE STABILIZATION: 2.5 stops.

800-947-9980
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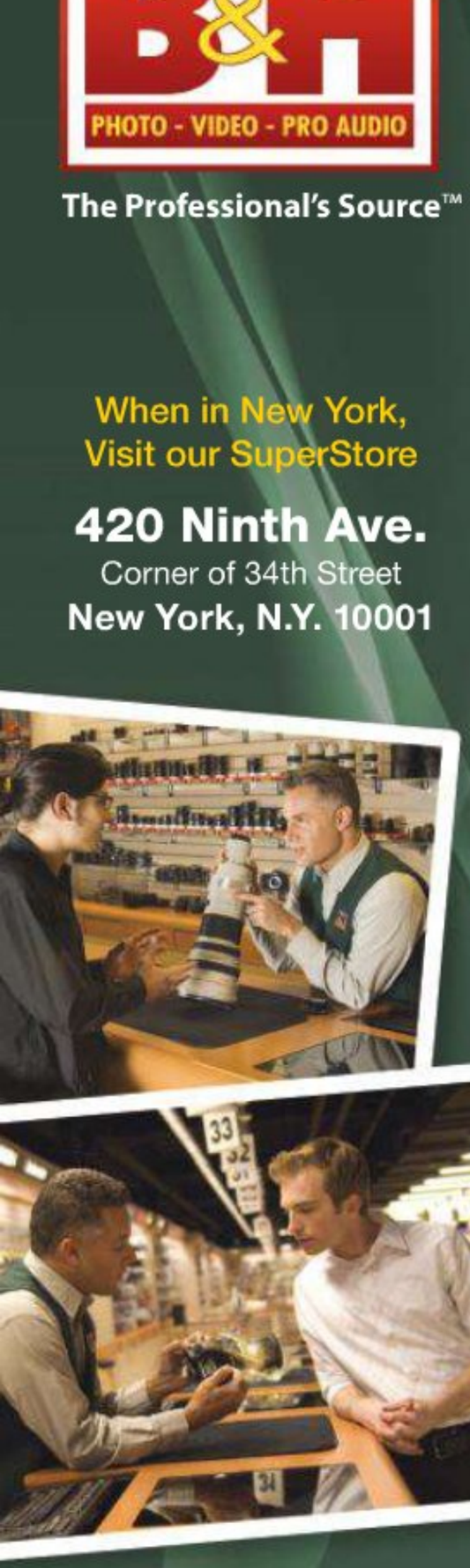

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- Full 1080p HD Video with Stereo Sound
- Super Slow Motion Movie Records 240fps

#CAPSE110 Black, Blue, Green, Pink, Red, Silver*

16 Mega Pixels

Canon Powershot G15

- 3.0" LCD • 1080p HD Video Capture
- 10fps Continuous Capture
- 5x Optical Zoom • 4x Digital Zoom
- 6.1-30.5mm f/1.8-2.8 (35mm equiv: 28-140mm) • SD/SDHC/SDXC Card Slot
- RAW & JPEG Capture • 12800 ISO

*#CAPSG15**

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Panasonic Lumix DMC-FZ60

- 3.0" LCD • SDHC/SDXC Card Slot
- Full HD 1080 60i Video Recording
- 24x Optical Zoom • 48x Digital Zoom
- 4.5-108mm f/2.8-5.2 (35mm equiv: 25-600mm) Leica DC Vario-Elmar Lens
- Full Manual Override • Creative Control Feature

*#PADMCFZ60**

16 Mega Pixels

Nikon Coolpix AW100

- 3.0" LCD • 5x Optical Zoom
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- Full HD 1080p Video with Stereo Sound

#NICPP7700B

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SONY CyberShot DSC-RX100

- Xtra Fine 3" LCD with WhiteMagic
- 3.6x Optical Zoom • 7.2x Digital Zoom
- 4-37.1mm f/1.8-4.9 (35mm equiv: 29-105mm) Carl Zeiss Vario-Sonnar T Lens
- MS Duo/Pro Duo/Pro HG-Duo, SDHC/SDXC Card Slots • Full HD 1080/60p Video Capture

*#SODSCRX100**

20 Mega Pixels

MEMORY CARDS

CF Compact Flash

	Delkin			Kingston				Lexar		Sandisk			
	500x	700x	1000x	Std	Elite Pro 133x	Ultimate 266x	Ultimate 600x	400x	1000x	Ultra 30 MBs	Extreme 60 MBs	Extreme Pro 90 MBs	Extreme Pro 100 MBs
8GB	22.50	—	—	14.95	18.95	—	—	38.50	—	27.95	44.95	—	—
16GB	36.95	64.95	119.99	—	—	27.95	54.95	69.95	127.95	49.95	74.50	118.95	—
32GB	59.95	114.95	199.99	—	—	54.95	94.95	123.95	237.00	—	124.95	212.50	—
64GB	112.95	259.95	399.99	—	—	—	—	222.50	413.00	—	252.95	416.95	—
128GB	—	489.95	509.99	—	—	—	—	369.95	712.95	—	—	—	833.95
256GB	—	—	999.99	—	—	—	—	—	—	—	—	—	—

MSDUO Memory Stick Pro Duo

	Sony	
	Mark II	Pro-HG HX
2GB	7.95	—
4GB	13.99	—
8GB	—	34.95
16GB	—	49.95
32GB	—	76.99

SDXC-UHS-1 Extended Capacity

	Delkin		Lexar		Sandisk		
	600x	633x	Class 10 400x	Class 10 600x	Class 10 30 MBs	Class 10 45 MBs	Class 10 90 MBs
64GB	119.99	139.95	91.95	149.95	64.95	87.95	162.95
128GB	229.99	—	179.95	279.95	—	184.95	—

Note: Not all devices support SDXC cards

SDHC-UHS-1 Ultra High Speed

	Delkin		Kingston	Lexar		Sandisk		Panasonic	Sony
	600x	633x	Ultimate XX 35 MBs	Class 10 400x	Class 10 600x	Ultra 30 MBs	Extreme Pro 90 MBs	Gold 25 MBs	Pro Class 10	Pro Class 10
8GB	24.99	27.50	26.95	17.50	—	13.50	26.45	27.50	54.95	17.48
16GB	34.99	45.95	49.95	24.95	43.95	16.95	42.95	48.50	99.95	31.95
32GB	59.99	91.95	106.50	39.95	79.00	36.50	83.95	89.95	196.50	63.40

SD HC Secure Digital High Capacity

	Delkin		Kingston			Lexar		Sandisk				Sony	
	Pro Class 6	Pro Class 10	Standard Class 4	Ultimate X Class 10	Micro Class 4 Multi Kit	Std Class 4	Platinum II 100x	Std Class 4	Ultra	Extreme Class 10	Micro Class 4	Standard Class 10	Micro Class 4
4GB	—	7.95	—	—	6.95	6.45	7.95	6.50	8.49	12.06	6.95	—	6.99
8GB	9.99	9.95	6.95	12.95	7.95	8.68	9.95	7.95	—	14.95	—	9.95	9.74
16GB	—	14.95	12.50	18.50	11.49	14.95	17.50	11.99	—	24.95	12.43	18.95	18.78
32GB	—	29.95	19.95	37.50	24.95	24.95	27.74	23.95	—	43.95	23.95	29.95	—

XQD High-Speed for Nikon D4

	Sony	
	H Series 125 MBs	S Series 168 MBs
16GB	129.99	—
32GB	229.99	258.95
64GB	—	458.95

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- One Leg, Column & Head Form Monopod • Removable Head
- Forged Aluminum Chassis • Pan & Tilt Control • Retractable Spikes in Feet

Model	Included Head	Load Capacity	Max. Height	Folded	Weight	SKU #	Price
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AT-3400	BA-00T	6.6 lb	56.7"	15"	3 lb	#OBAT3400BA00	$149.95
AT-3410	BA-00T	6.6 lb	59.4"	16.5"	3.4 lb	#OBAT3410BA00	$224.95
AT-3420	BA-0T	11 lb	62.6"	17.7"	4.2 lb	#OBAT3420BA0T	$259.95
6x Carbon Fiber Series with Head							
CT-3400	BB-0T	12.4 lb	56.7"	15"	3 lb	#OBCT3400BB0T	$349.95
CT-3410	BB-0T	16.8 lb	59.4"	16.5"	3 lb	#OBCT3410BB0T	$399.95
CT-3420	BB-1T	22 lb	62.8"	17.7"	4 lb	#OBCT3420BB1T	$449.95
CT-3500	BB-0T	12.4 lb	53.3"	12.8"	2.5 lb	#OBCT3500BB0T	$349.95
CT-3510	BB-0T	16.8 lb	60.6"	15.5"	3.2 lb	#OBCT3510BB0T	$399.95
CT-3520	BB-1T	22 lb	64.8"	16.5"	4 lb	#OBCT3520BB1T	$469.95

OLYMPUS E-PM1 Mirrorless System Camera

- 3.0" LCD with AR Coating
- High Speed Live MOS Sensor
- TruePic VI Image Processor
- 4/3 Full Frame Zuiko Lenses
- SD/SDHC/SDXC Card Slot
- Live View Mode
- TTL Metering
- 1080/60i HD Video Capture
- 3D Photo Capture
- Available in Black, Brown, Pink, Purple, Silver, White

*Kit with 14-42mm II Lens.....#OLEPM11442**

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Panasonic Lumix DMC-G5 Mirrorless System Camera

- Full HD 1080 60p Video
- Redesigned Venus Engine Image Processor • 3.0" Touch Screen Tiltable-Rotatable LCD
- Micro 4/3 Lens Mount
- SD/SDHC/SDXC Card Slot
- Live View Finder with Eye Sensor
- Electronic Silent Shutter Mode
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- Contrast AF, Touch AF and Light Speed AF

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*with 16-50mm Lens..... #SONEX5RL**
*with 18-55mm Lens..... #SONEX5RK**

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SONY Alpha NEX-6 Mirrorless System Camera

- Fast Hybrid AF with Phase-Detection AF
- 3.0" LCD
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- Captures 1080 HD Video
- SD/SDHC/SDXC & MS Pro Duo/ Pro HG-Duo Card Slot
- Wi-Fi Capable
- Fast 10fps Burst Shooting
- PlayMemories Camera Apps

*with 16-50mm Lens.....#SONEX6L**

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SONY Alpha SLT-A57 DSLR

- 3.0" 921,600-dot Tiltable LCD
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- Sony A-mount Lens Mount (1.5x factor)
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- Auto Portrait Framing
- ISO 100-16000
- Tru-Finder EVF

Body Only..... #SOSLTA57
Kit with 18-55mm Lens .....#SOSLTA57K

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SONY Alpha SLT-A99 DSLR

- Sony Dual AF System & Translucent Mirror
- Full-Frame Exmor CMOS Sensor
- XGA OLED Electronic VF
- 3.0" TruBlack Tilting LCD
- Uses Sony Alpha Lenses
- MS Pro Duo/HG-Duo & SD/SDHC/SDXC Card Slots
- Internal SteadyShot Image Stabilization • Full HD 1920x1080 60p Video Recording

*Body Only.....#SOSLTA99V**

24 Mega Pixels

OLYMPUS

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FL-300R Flash	169.95
FL-600R Flash	299.95
FL-50R Flash	499.95
RF-11 Ring Flash	249.95
SRF-11 Ring Flash Set	559.95
TF-22 Twin Flash	449.95
STF-22 Twin Flash Set	739.95

Zuiko 4/3 System Digital Lenses

8/3.5 Fish-eye ED	799.99
35/3.5 Macro ED (52ø)	229.95
50/2.0 Macro ED (77ø)	499.95
150/2.0 ED (82ø)	2,499.95
300/2.8 ED	6,999.95
7-14/4.0 ED (72ø)	1,799.95
11-22/2.8-3.5 ED (72ø)	799.95
12-60/2.8-4 ED SWD (72ø)	999.95
14-42/3.5-5.6 ED (58ø)	249.95
18-180/3.5-6.3 ED (62ø)	499.95
35-100/2.0 ED (77ø)	2,499.99
40-150/4-5.6 ED (58ø)	279.95
50-200/2.8-3.2 ED SWD (67ø)	1,199.95
90-250/2.8 ED (105ø)	5,999.95
EC-14 1.4x Teleconverter	439.95
EC-20 2x Teleconverter	479.95
MF-1 OM Lens Adapter	83.95

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AF Flash System

AF-360FGZ	
AF-540FGZ	

SMCP-DA Digital AF Lenses

14/2.8 ED IF (77ø)	
15/4.0 ED AL (49ø)	
35/2.8 Mac. Limited (49ø)	
55/1.4 Limited (58ø)	
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40/2.8 Limited "Pancake" (49ø)	
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300/4.0 ED IF SDM (77ø)	
10-17/3.5-4.5 ED IF (77ø)	
12-24/4 ED AL IF (77ø)	
16-45/4 ED AL (67ø)	
16-50/2.8 ED AL IF SDM (77ø)	
17-70/4.0 AL IF SDM (67ø)	
18-55/3.5-5.6 AL II (52ø)	
50-135/2.8 ED IF SDM (67ø)	
50-200/4-5.6 ED WR (52ø)	
55-300/4-5.8 ED (58ø)	
60-250/4.0 ED IF SDM (67ø)	

AF Lenses for 35mm & Digital SLRs

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HVL-F58AM	499.99

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18-200/3.5-6.3 DT Aspherical (62ø)	549.99
18-250/3.5-6.3 DT (62ø)	649.99
24-70/2.8 Carl Zeiss (77ø)	1,999.99
70-200/2.8 G APO (77ø)	1,999.99
70-300/4.5-5.6 G (62ø)	999.99
75-300/4.5-5.6 (55ø)	249.99
1.4x Teleconverter	549.99
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50mm f/2 Macro ED Zuiko Digital Lens

- *Designed exclusively for Digital SLRs*
- Ideal for macro photography and also as a portrait lens
- Magnification 1:2
- ED glass element
- Min. focus: 9.45"
- 52mm filter diameter
- Weight: 10.6 oz

PENTAX
18-135mm f/3.5-5.6 ED AL (IF) DC WR Digital Lens

- *Designed exclusively for Digital SLRs*
- SP Coating Repels Dust, Water, & Grease
- Weather resistant
- Quick-Shift Focus System
- Min. focus: 1.3'
- 62mm filter diameter
- Weight: 14.3 oz

SONY
HVL-F58AM Shoe-Mount Digital Flash

- Zoom Head (24-105mm)
- Bounce & Swivel Head
- Guide No. 190'
- TTL Dedication
- Vari-Power
- High-Speed Sync
- Auto WB Adjustment
- Wireless Ratio Control
- Weight: 15.6 oz

SONY
16-80mm f/3.5-4.5 Carl Zeiss T* DT Digital Lens

- *Designed exclusively for Digital SLRs*
- Ideal for snapshots, portraits, interiors, or outdoor scenery
- 35mm equiv: 24-120mm
- Min. focus: 13.8"
- 62mm filter diameter
- Weight: 15.5 oz

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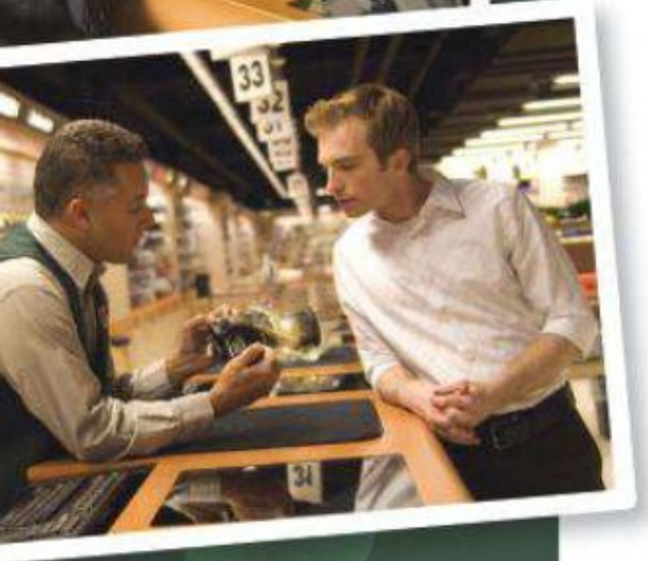

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Canon Digital Rebel T3i DSLR

- 3" Clear View Vari-Angle LCD
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- SDHC/SDXC Card Slot
- 3.7 fps Continuous Shooting
- ISO 100-6400
- RAW + JPEG Files
- Full HD Movie Mode with Manual Exposure
- 63 Zone Dual-Layer System/9 Point AF

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Body Only..... #CAEDRT3I ..... —
Kit with 18-55mm IS..... #CAEDRT3IK ..... ***$50 Rebate!***
T3 Kit *with 18-55mm IS* ..... #CAEDRT3K ..... ***$50 Rebate!***

18 Mega Pixels

Canon Digital Rebel T4i DSLR

- STM Lens Support for Quiet AF in Movies
- DIGIC 5 Image Processor
- 3.0" Vari-Angle Touch Screen LCD
- Uses Canon EF Lenses (1.6x factor)
- SDHC/SDXC Card Slot
- ISO 100-12800, Expandable to 25600
- Full HD Movie Mode with Continuous AF
- 5.0 FPS • Multi Shot Noise Reduction

Expires 10-27-12

Body Only..... #CAEDRT4I..... —
Kit with 18-55mm IS..... #CAEDRT4IK ..... ***$50 Rebate***
Kit with 18-135mm IS..... #CAEDRT4IKZ..... ***$50 Rebate***

18 Mega Pixels

Canon EOS-60D DSLR

- 1920 x 1080 HD Video Capture
- DIGIC 4 Image Processor
- SD/SDHC/SDXC Card Slot
- Works with all Canon EF & EF-S Lenses • Vari-Angle Clear View 3.0" Flip-Out LCD
- HDMI Output to HDTV
- 5.3 fps Continuous Shooting
- ISO 6400 - Expandable to 12800

Body Only..... #CAE60D ..... ***$100 Rebate!***
Kit with 18-135mm IS..... #CAE60D18135 ..... ***$100 Rebate!***
Kit with 18-200mm IS ..... #CAE60D18200 ..... ***$100 Rebate!***

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18 Mega Pixels

Canon EOS-5D Mark III DSLR

- 3.2" Clear View High Resolution LCD
- DIGIC 5+ Image Processor
- 61-Point High Density AF
- Uses Canon EF Lenses
- Dual CF, SD Card Slots
- Extended ISO Range (50-102400)
- Built-In HDR & Multiple Exposure Modes
- Full HD 1080/30p and 720/60p Formats

Body Only..... #CAE5D3* ..... —
Kit with 24-105mm L IS..... #CAE5D324105..... —
5D Mark II *Body Only*..... #CAE5D2..... ***$400 Rebate!***
5D Mark II Kit *with 24-105mm L IS.* #CAE5D224105... ***$400 Rebate!***

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22 Mega Pixels

Canon EOS-7D DSLR

- Record HD Video • 3" LCD
- Uses Canon EF Lenses
- CF, MD Card Slot
- Dust and Weather Resistant
- Selectable Video Exposure and Frame Rates
- ISO 100-6400 (expandable to 12800) • 8 fps Burst Mode
- 19-Point, All Cross-Type AF System

Body Only..... #CAE7D ..... ***$100 Rebate***
Kit with 18-135mm IS..... #CAE7D18135..... ***$100 Rebate***
Kit with 28-135mm IS..... #CAE7D28135..... ***$100 Rebate***

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18 Mega Pixels

Canon EOS-1Dx DSLR

- Dual DIGIC 5+ Image Processors
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- Eye-Level Pentaprism Viewfinder
- 3.2" LCD Monitor
- Uses Canon EF Lenses
- Dual CF card slots
- 1920 x 1080 HD Video Capture
- Live View Still and Video Recording
- 61-Point High Density Auto Focus

Body Only..... #CAE1DX* .....

18 Mega Pixels

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EOS Flash System (USA)

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580EX II .....
600EX-RT..... ***$50 Rebate****
MR-14EX Ringlight..... ***$45 Rebate****
MT-24EX Twin Flash..... ***$60 Rebate****

EF-S Lenses for Digital Only (USA)

(Not compatible with full frame cameras)

60/2.8 USM Macro (52ø)..... ***$60 Rebate****
10-22/3.5-4.5 USM (77ø)..... ***$100 Rebate****
15-85/3.5-5.6 IS USM (72ø)..... ***$100 Rebate****
17-55/2.8 IS USM (67ø)..... ***$120 Rebate****
17-85/4-5.6 IS USM (67ø) .....
18-55/3.5-5.6 IS (58ø) .....
18-135/3.5-5.6 IS (67ø) .....
18-200/3.5-5.6 IS (72ø) .....
55-250/4.0-5.6 IS USM (58ø) .....

EF Lenses (USA)

20/2.8 USM (72ø)..... ***$50 Rebate****
24/2.8 IS USM (58ø).....
28/1.8 USM (58ø)..... ***$60 Rebate****
28/2.8 IS USM (58ø).....
35/2 (52ø).....

EF Lenses (USA)

40/2.8 STM Pancake (52ø).....
50/1.8 II (52ø) .....
50/2.5 Macro (52ø).....
50/1.4 USM (58ø)..... ***$40 Rebate****
MP-E 65/2.8 1x-5x Macro (58ø).....
85/1.8 USM (58ø)..... ***$50 Rebate****
100/2 USM (58ø).....
100/2.8 USM Macro (58ø)..... ***$50 Rebate****
135/2.8 (52ø).....
28-135/3.5-5.6 IS USM (72ø) .....
70-300/4-5.6 IS USM (58ø) .....
70-300/4.5-5.6 DO IS USM (58ø).....
75-300/4.0-5.6 III (58ø).....
75-300/4.0-5.6 III USM (58ø).....

TS-E MF Lenses (USA)

17/4.0 "L"..... ***$200 Rebate****
24/3.5 "L" II..... ***$200 Rebate****
45/2.8 ..... 90/2.8 .....

EF "L" Lenses (USA)

14/2.8 USM II..... ***$200 Rebate****
24/1.4 II (77ø) ..... ***$150 Rebate****
35/1.4 USM (72ø)..... ***$150 Rebate****
50/1.2 USM (72ø)..... ***$180 Rebate****
85/1.2 USM II (72ø) ..... ***$200 Rebate****

EF "L" Lenses (USA)

100/2.8 IS USM Macro (67ø)..... ***$120 Rebate****
135/2.0 USM (72ø).....
180/3.5 USM Macro (72ø)..... ***$150 Rebate****
200/2.8 USM II (72ø) .....
200/2.0 IS USM (52ø) .....
300/4.0 IS USM (77ø) .....
300/2.8 IS USM II (52ø rear).....
400/5.6 USM (77ø).....
400/2.8 IS II (52ø rear).....
500/4 IS USM II (52ø rear).....
600/4.0 IS II (52ø rear).....
8-15/4.0 Fish-eye USM..... ***$150 Rebate****
16-35/2.8 USM II (82ø)..... ***$170 Rebate****
17-40/4.0 USM (77ø) ..... ***$100 Rebate****
24-70/2.8 II USM (82ø).....
24-105/4 IS USM (77ø).....
28-300/3.5-5.6 IS USM (77ø) .....
70-200/4.0 USM (67ø) .....
70-200/4.0 IS USM (77ø)..... ***$150 Rebate****
70-200/2.8 USM (77ø) .....
70-200/2.8 IS II USM (77ø) ..... ***$300 Rebate****
70-300/4.0-5.6 IS USM (67ø) ..... ***$200 Rebate****
100-400/4.5-5.6 IS USM (77ø) ..... ***$170 Rebate****
1.4x III Teleconverter ..... ***$40 Rebate****
2x III Teleconverter ..... ***$40 Rebate****

NEW

Canon

Instant Rebates on Lenses & Speedlites

** Expire 10-27-12*

EOS Flash System	Price	Rebate	Final
270EX II	$169.99	$15	$154.99
430EX II	$299.99	$30	$269.99
600EX-RT	$629.99	$50	$579.99
MR-14EX Ringlight	$549.99	$45	$504.99
MT-24EX Twin Flash	$829.99	$60	$769.99

TS-E "L" MF Lenses	Price	Rebate	Final
17/4.0 "L"	$2,499.00	$200	$2,299.00
24/3.5 "L" II	$2,199.00	$200	$1,999.00

EF-S Digital Lenses	Price	Rebate	Final
60/2.8 USM Macro	$469.99	$60	$409.99
10-22/3.5-4.5 USM	$859.99	$100	$759.99
15-85/3.5-5.6 IS USM	$799.99	$100	$699.99
17-55/2.8 IS USM	$1,179.00	$120	$1,059.00

EF Lenses	Price	Rebate	Final
28/1.8 USM	$509.99	$50	$449.99
20/2.8 USM	$539.99	$60	$489.99
50/1.4 USM	$399.99	$40	$359.99
85/1.8 USM	$419.99	$50	$369.99
100/2.8 USM Macro	$599.99	$50	$549.99

EF "L" Lenses	Price	Rebate	Final
14/2.8 USM II	$2,359.00	$200	$2,159.00
24/1.4 II	$1,749.00	$150	$1,599.00
35/1.4 USM	$1,479.00	$150	$1,329.00
50/1.2 USM	$1,619.00	$180	$1,439.00
85/1.2 USM II	$2,199.00	$200	$1,999.00
100/2.8 IS USM Macro	$1,049.00	$120	$929.00
180/3.5 USM Macro	$1,579.00	$150	$1,429.00
8-15/4.0 Fish-eye USM	$1,499.00	$150	$1,349.00
16-35/2.8 USM II	$1,699.00	$170	$1,529.00
17-40/4.0 USM	$839.99	$100	$739.99
70-200/4.0 IS USM	$1,349.00	$150	$1,199.00
70-200/2.8 IS II USM	$2,499.00	$300	$2,199.00
70-300mm IS USM	$1,599.00	$200	$1,399.00
100-400mm IS USM	$1,699.00	$170	$1,529.00
1.4x III Teleconverter	$499.99	$40	$459.99
2x III Teleconverter	$499.99	$40	$459.99

Nikon 1 J2 Mirrorless Digital Camera

- EXPEED 3 Dual Image Processor
- Full HD 1080p Movie with Stereo Sound
- Interchangeable 1 NIKKOR Lens System
- 3.0" LCD • Panoramic Mode
- SD/SDHC/SDXC Card Slot
- Selective Color & Backlighting Modes
- Night Portrait & Night Landscape Modes
- Nikon Inc. limited warranty included

Valid Through 10-27-12

10 Mega Pixels

Available in Black, Orange, Pink, Red, Silver or White

		Price	Rebate	Final Cost
1 J2 Kit with 10-30mm VR	*#NI1J21030**	549.95	—	—
1 J2 Kit with 10-30 & 30-110mm VR	*#NI1J21030K**	799.95	**$100**	**699.95**
1 J1 Kit with 10-30 & 30-110mm VR**	*#NI1J11030**	846.95	**$250**	**596.95**

Nikon D3200 DSLR

Valid Through 10-27-12

- EXPEED III Image Processor
- HD 1080p Video
- 3" LCD • Live View
- Uses Nikon AF Lenses (1.5x factor)
- SD/SDHC/SDXC Card Slot
- 11-point AF • Up To ISO 12800
- Nikon Inc. limited warranty included

24 Mega Pixels

D3200 is available in Black or Red

		Price	Rebate	Final Cost
D3200 Kit Black w/18-55mm VR	*#NID32001855**	696.95	**$50**	**646.95**
D3100 Kit with 18-55mm VR	*#NID31001855*	646.95	**$150**	**496.95**
D5100 Kit with 18-55mm VR	*#NID51001855*	796.95	**$200**	**596.95**

Nikon D7000 DSLR

Valid Through 10-27-12

- EXPEED 2 Image Processor
- 1080p HD Video Capture
- RAW + JPEG Still Image Capture
- Accepts Nikon AF Lenses (1.5x factor) • 3" LCD Monitor
- Twin SD/SDHC/SDXC Card Slots
- RGB 3D Matrix Metering System
- Nikon Inc. limited warranty included

16 Mega Pixels

		Price	Rebate	Final Cost
Body Only	*#NID7000*	1,196.95	**$200**	**996.95**
Kit with 18-105mm VR	*#NID700018105*	1,496.95	**$200**	**1,296.95**
Kit with 18-200mm VR II	*#NID700018200*	2,046.95	**$450**	**1,596.95**

Nikon D600 DSLR

Valid Through 10-27-12

- FX-Format (Full-Frame) CMOS Sensor
- Uses Nikon AF Lenses
- 3.2" LCD • EXPEED 3 Processor
- SD/SDHC/SDXC Card Slot
- 1080p HD Video Capture
- 5.5 fps Continuous Shooting
- 39 Wide-Area AF Focus Points
- 100-6400 ISO, Expandable to 50-25600
- Nikon Inc. limited warranty included

24 Mega Pixels

		Price	Rebate	Final Cost
Body Only	*#NID600*	2,096.95	—	—
Kit with 24-85mm VR Lens	*#NID6002485*	2,696.95	**$100**	**2,596.95**

Nikon D800 DSLR

- 35.9x24mm CMOS FX Format Sensor
- 3.2" LCD Monitor
- Nikon F Mount Lens Mount
- CF & SD Dual Card Slots
- Optical Low-Pass Filter
- Eye-Level Pentaprism Viewfinder
- 1920 x 1080/30/25/24p HD Video Capture • Matrix/Center-Weighted/Spot Metering
- Nikon Inc. limited warranty included

36 Mega Pixels

		Price	Final Cost
Body Only	*#NID800*	**2,999.95**	

Nikon D4 DSLR

- RAW, TIFF, JPEG, RAW+JPEG Files
- FX-format (full-frame) CMOS Sensor
- 1080p HD Broadcast Quality Video
- EXPEED3 Image Processor
- 3.2" LCD Screen with Live View
- Compatible with Most Nikkor Optics
- Matrix, Center-Weighted, Spot Metering • 100-12800 ISO
- CF Type 1 & XQD Compatible
- Nikon Inc. limited warranty included

16 Mega Pixels

		Price	Final Cost
Body Only	*#NID4*	**5,999.95**	

Nikon SLR Lenses and Flashes

Instant Savings! Expire 10-27-12

AF Flashes

	Price	Final Cost
SB-400		
SB-700	**326.95**	**296.95** [A]
SB-910	**546.95**	**496.95** [B]
R1 Wireless Twin Flash		
R1C1 Wireless Twin Flash System		

DX ED-IF Lenses for Digital Only

	Price	Final Cost
10.5/2.8 Fish-Eye		
35/1.8 G AF-S (52ø)	**196.95**	—
40/2.8 G AF-S Micro (52ø)	**276.95**	—
85/3.5 G ED VR Micro (52ø)	**529.95**	**429.95** [C]
10-24/3.5-4.5 G AF-S (77ø)		
12-24/4 G AF-S (77ø)		
16-85/3.5-5.6 G AF-S VR (67ø)		
17-55/2.8 G AF-S (77ø)		
18-55/3.5-5.6 G AF-S II (52ø)		
18-55/3.5-5.6 G AF-S VR (52ø)	**196.95**	—
18-105/3.5-5.6 G AF-S VR (67ø)	**396.95**	—
18-200/3.5-5.6 G AF-S VR II (72ø)	**846.95**	**596.95** [D]
18-300/3.5-5.6 G AF-S ED VR (77ø)	**999.95**	—
55-200/4-5.6 G AF-S (52ø)		
55-200/4-5.6 G AF-S VR (52ø)	**246.95**	**146.95** [E]
55-300/4.5-5.6 G AF-S VR (58ø)	**396.95**	**246.95** [F]

D-Type AF Lenses

	Price	Final Cost
14/2.8 D ED		
16/2.8 D (39ø) with Hood		
20/2.8 D (62ø)		
24/2.8 D (52ø)		
24/1.4 G AF-S ED (77ø)		
24/3.5 D ED PC-E (77ø)		
28/1.8 G AF-S (67ø)	**699.95**	—
28/2.8 D (52ø)		
35/2.0 D (52ø)		
35/1.4 G AF-S ED (67ø)		
45/2.8 D ED PC-E Micro (77ø)		
50/1.8 D (52ø)		
50/1.8 G AF-S (58ø)	**216.95**	—
50/1.4 D (52ø)		
50/1.4 G AF-S (58ø)		
60/2.8 D Micro (62ø) (1:1)		
60/2.8 G AF-S ED Micro (62ø)		
85/1.8 D (62ø) with Hood		
85/1.4 D IF (77ø)		
85/1.4 G AF-S (77ø)		
85/1.8 G AF-S (67ø)	**496.95**	—
85/2.8 PC-E Micro (77ø)		
105/2.8 G AF-S ED-IF VR Micro (62ø)		
105/2.0 DC D with Hood (72ø)		
180/2.8 D ED-IF (72ø)		

D-Type AF Lenses

	Price	Final Cost
200/4 D ED-IF Micro with Case (62ø)		
200/2 G AF-S ED-IF VR II (52ø)		
300/4.0 D AF-S ED-IF (77ø)		
300/2.8 G AF-S VR (52ø-R)		
400/2.8 G AF-S VR ED (52ø)		
500/4.0 G AF-S VR ED (52ø)		
600/4.0 G AF-S VR ED (52ø)		
14-24/2.8 G AF-S ED-IF	**1,996.95**	—
16-35/4.0 G AF-S ED VR (77ø)		
17-35/2.8 D AF-S ED-IF (77ø)		
24-70/2.8 G AF-S ED-IF (77ø)	**1,886.95**	**1686.95** [G]
24-85/2.8-4.0 D IF (72ø)		
24-85/3.5-4.5 G AF-S ED VR (72ø)	**596.95**	**496.95** [H]
24-120/4.0 G AF-S ED VR (77ø)	**1,296.95**	—
28-300/3.5-5.6 G AF-S ED VR (77ø)	**1,046.95**	**896.95** [I]
70-200/2.8 G AF-S ED-IF VR II (77ø)	**2,396.95**	**2196.95** [J]
70-300/4.0-5.6 G (62ø)		
70-300/4.5-5.6 G-AFS VR (67ø)	**586.95**	**386.95** [K]
80-200/2.8 D with Collar (77ø)		
80-400/4.5-5.6 D VR (77ø)		
200-400/4 G AF-S ED VR II (52ø)		
TC-14E II (1.4x) Teleconverter		
TC-17E II (1.7x) Teleconverter		
TC-20E III (2x) Teleconverter		

NEW

Nikon

Instant Savings up to $450 on Select DSLRs Flash & Lens Combos

Expire 10-27-12

Receive Instant Flash/Lens Savings

		Lens	Price	Savings	Final
Buy Flash [A or B] **with** any current Nikon **DSLR**	[A]	SB-700	$326.95	**$30**	**$296.95**
	[B]	SB-910	$546.95	**$50**	**$496.95**
Buy Lens [C or D] **with** D3100, D3200, D5100, D90, D7000 or D300s **DSLR**	[C]	85mm f/3.5 G ED VR Micro DX	$529.95	**$100**	**$429.95**
	[D]	18-200mm f/3.5-5.6 G DX	$846.95	**$250**	**$596.95**
Buy Lens [E or F] **with** D3000, D3100, D3200, D5100, D7000, D90 **DSLR**	[E]	55-200mm f/4.0-5.6 G DX	$246.95	**$100**	**$146.95**
	[F]	55-300mm f/4.5-5.6 G DX	$396.95	**$150**	**$246.95**
Buy Lens [G, H, I, J or K] **with** D7000, D300s, D600, D800, D800E, D3x or D4 **DSLR**	[G]	24-70mm f/2.8 G	$1,886.95	**$200**	**$1,686.95**
	[H]	24-85mm f/3.5-4.5 G AF-S ED VR	$596.95	**$100**	**$496.95**
	[I]	28-300mm f/3.5-5.6 G AF-S VR	$1,046.95	**$150**	**$896.95**
	[J]	70-200mm f/2.8 G AF-S ED-IF VR II	$2,396.95	**$200**	**$2,196.95**
	[K]	70-300mm f/4.5-5.6 G-AFS VR	$586.95	**$200**	**$386.95**

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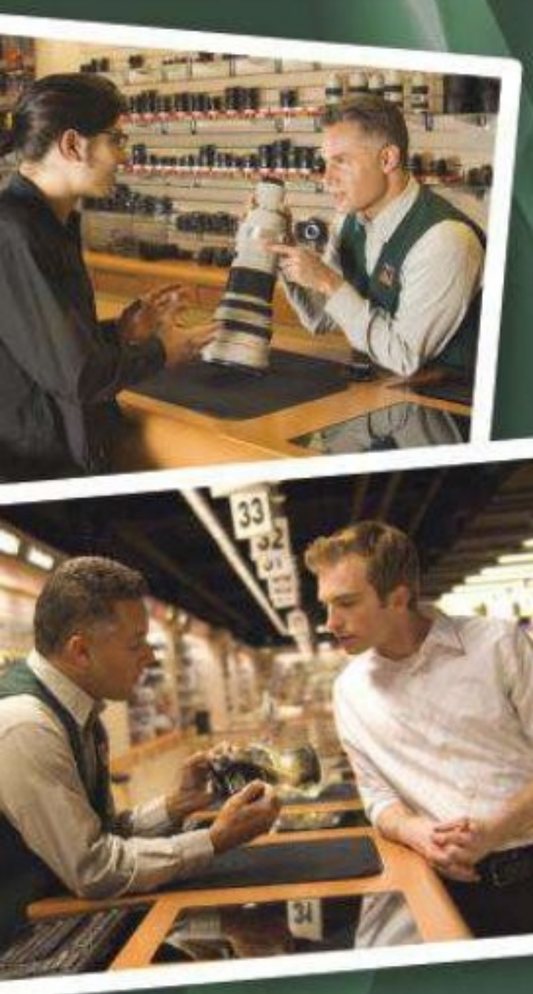

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Di for both digital and film SLR cameras • **Di-II** for Digital SLRs Only • **Di III** for mirror-less cameras Only

C = Canon N = Nikon P = Pentax SM = Sony/Minolta SE = Sony E Mount *** Price After Rebate* *Exp. 12-31-12*

		SKU #	Available for	Rebate	Price
Di-II	60/2.0 LD IF Macro (55ø)	#TA602DI*	C, N, SM	$100	424.00**
Di	90/2.8 Macro (55ø)	#TA9028M*	C, N, P, SM	$50	449.00**
Di	180/3.5 LD IF Macro (72ø)	#TA18035*	C, N, SM	$50	689.00**
Di-II	10-24/3.5-4.5 (77ø)	#TA102435*	C, N, P, SM	$50	449.00**
Di-II	17-50/2.8 XR LD IF Aspherical (67ø)	#TA175028*	C, N, P, SM	$75	424.00**
Di-II	17-50/2.8 XR VC LD IF Asph. (67ø)	#TA175028*Q	C, N	$100	549.00**
Di-II	18-200/3.5-6.3 (62ø)	#TA1820035*	C, N, P, SM	$50	249.00**
Di-III	18-200/3.5-6.3 VC (62ø) Black or Silver	#TA1820035S*	SE	—	739.00
Di-II	18-270/3.5-6.3 VC (72ø)	#TA1827035*	N	—	CALL
Di-II	18-270/3.5-6.3 VC PZD (62ø)	#TA18270*	C, N, SM	$100	549.00**
Di	24-70/2.8 VC USD (82ø)	#TA247028*	C, N, SM	—	1,299.00
Di	28-75/2.8 XR (67ø)	#TA287528*	C, N, P, SM	$25	474.00**
Di	28-300/3.5-6.3 XR LD (62ø)	#TA2830035XD*	C, P, SM	—	419.00
Di	28-300/3.5-6.3 XR VC (62ø)	#TA2830035*	C, N	—	629.00
Di	70-200/2.8 LD IF Macro (77ø)	#TA7020028M*	C, N, P, SM	—	769.00
Di	70-300/4.0-5.6 VC USD (62ø)	#TA70300*	C, N, SM	$100	349.00**
Di	75-300/4.0-5.6 LD (62ø)	#TA753004*	C, N, SM	—	164.00
Di	200-500/5-6.3 LD IF (86Cø)	#TA2005005*	C, N, SM	—	949.00
	1.4x SP AF Pro Teleconverter	#TA14XP*	C, N	—	224.00
	2x SP AF Pro Teleconverter	#TA2XP*	C, N	—	254.00

Tokina AF LENSES

DX – for Digital SLRs Only **FX** – Designed for full frame DSLRs *** Price After Rebate Exp. 1-31-13*

		Canon EOS	Nikon AF	Rebate	Price
FX	100/2.8 Pro D Macro (52ø)	#TO10028PCAF	#TO10028PNAF	—	489.00
DX	10-17/3.5-4.5 ATX Fisheye	#TO101735CAF	#TO101735NAF	—	669.00
DX	11-16/2.8 Pro II (77ø)	#TO111628PCII	#TO111628PNII	$40	699.00**
DX	12-24/4.0 Pro II (77ø)	#TO12244DXC	#TO12244DXN	—	499.00
FX	16-28/2.8 Pro	#TO1628FXC	#TO1628FXN	$100	749.00**
FX	17-35/4 Pro (82ø)	#TO1735F4FXC	#TO1735F4FXN	$70	599.00**

SIGMA AF LENSES & FLASHES

New! Instant Rebates up to $200 Expires 10-30-12 ** Price After Rebate

DC – for Digital SLRs Only • **DG** – Optimized for Digital SLRs

H – HSM Model with Canon, Nikon, Sigma
R – Rear Slip-in Gelatin Filter Slot

		Canon	Nikon	Pentax	Sigma	Sony	Rebate	Price
DC	4.5mm f/2.8 EX Circular Fisheye HSM R	#SI4528EXDCC	#SI4528EXDCN	#SI4528EXDCP	#SI4528EXDCSI	#SI4528EXDSO	—	899.00
DG	8/3.5 EX Circular Fisheye R	#SI835CA	#SI835NA	—	#SI835SI	#SI835SO	—	899.00
DC	10mm f/2.8 EX Fisheye HSM R	#SI1028EXDCC	#SI1028EXDCN	#SI1028EXDCP	#SI1028EXDCSI	#SI1028EXDCSO	$50	599.00**
DG	15/2.8 EX Diagonal Fisheye R	#SI1528DGCAF	#SI1528DGNAF	#SI1528DGPAF	#SI1528DGSA	#SI1528DGMAF	—	609.00
DG	20/1.8 EX DF RF Aspherical (82ø)	#SI2018CAF	#SI2018NAF	#SI2018PAF	#SI2018SA	#SI2018MAF	—	629.00
DG	24/1.8 EX DF Aspherical Macro (77ø)	#SI2418MCAF	#SI2418MNAF	#SI2418MPAF	#SI2418MSA	#SI2418MMAF	—	549.00
DG	28/1.8 EX DF Aspherical Macro (77ø)	#SI2818MCAF	#SI2818MNAF	#SI2818MPAF	#SI2818MSA	#SI2818MMAF	$50	399.00**
DC	30mm f/1.4 EX HSM (62ø)	#SI3014DCCAF	#SI3014DCNAF	#SI3014DCPAF	#SI3014DCSA	#SI3014DCMAF	—	489.00
DG	50mm f/1.4 EX (77ø) H	#SI5014C	#SI5014N	#SI5014PE	#SI5014SI	#SI5014SOM	$50	449.00**
DG	50/2.8 EX Macro (55ø)	#SI5028MDGCAF	#SI5028MDGNAF	#SI5028MDGPAF	#SI5028MDGSA	#SI5028MDGMAF	—	369.00
DG	70/2.8 EX Macro (62ø)	#SI7028MDGCA	#SI7028MDGNA	#SI7028MDGPA	#SI7028MDGSA	#SI7028MDGSAQ	—	499.00
DG	85/1.4 EX HSM (77ø)	#SI8514C	#SI8514N	#SI8514P	#SI8514SI	#SI8514S	—	969.00
DG	105/2.8 EX Macro OS HSM (62ø)	#SI10528MDGCE	#SI10528MDGNQ	—	#SI10528MDGS	#SI10528MDGSM	$200	769.00**
DG	150/2.8 EX APO Macro OS HSM (72ø)	#SI15028AMOC	#SI15028AMON	#SI15028AMOP	#SI15028AMSI	#SI15028AMOS	—	1,099.00
DG	300/2.8 APO EX HSM	#SI30028DGCAF	#SI30028DGNAF	#SI30028DGPAF	#SI30028DGSA	#SI30028DGMAF	—	3,399.00
DG	500/4.5 APO EX HSM	#SI50045DGCAF	#SI50045DGNAF	#SI50045DGPAF	#SI50045DGSA	#SI50045DGMAF	—	4,999.00
DC	8-16/4.5-5.6 HSM	#SI8164556CA	#SI8164556NI	#SI8164556PE	#SI8164556SI	#SI8164556SO	$50	649.00**
DC	10-20/4-5.6 EX HSM (77ø)	#SI102045DCAF	#SI102045DNAF	#SI102045DPAF	#SI102045DSA	#SI102045DMAF	—	479.00
DC	10-20/3.5 EX HSM (82ø)	#SI102035C	#SI102035SN	#SI102035P	#SI102035SG	#SI102035S	—	649.00
DG	12-24/4.5-5.6 EX Aspherical HSM II	#SI122445C	#SI122445N	#SI122445P	#SI122445SI	#SI122445S	$75	874.00**
DC	17-50/2.8 EX OS HSM (77ø)	#SI175028CA	#SI175028NI	#SI175028PE	#SI175028SI	#SI175028SO	$50	619.00**
DC	17-70/2.8-4.0 OS Macro HSM (72ø)	#SI177028DCC	#SI177028DCNQ	#SI177028DCP	#SI177028DCSI	#SI177028DCSM	—	469.00
DC	18-50/2.8-4.5 OS HSM (67ø)	#SI185028DOC	#SI185028DON	#SI185028DOP	#SI185028DOSG	#SI185028DOS	—	199.00
DC	18-125/3.8-5.6 OS (Optical Stabilizer) (67ø) H	#SI18125350SC	#SI18125350SN	#SI18125350SP	#SI18125350SI	#SI18125350SS	—	339.00
DC	18-200/3.5-6.3 OS II HSM (72ø)	#SI1820035CQ	#SI1820035NQ	#SI1820035P	#SI1820035SAQ	#SI1820035SQ	—	499.00
DC	18-250/3.5-6.3 OS HSM (72ø)	#SI1825035C	#SI1825035N	#SI1825035CP	#SI1825035S	#SI1825035CSN	$50	429.00**
DG	24-70/2.8 EX IF HSM (82ø)	#SI247028C	#SI247028NF	#SI247028PS	#SI247028S	#SI247028SM	$75	824.00**
DC	50-150/2.8 EX APO OS HSM (77ø)	#SI5015028CA	#SI5015028NA	—	#SI5015028SAF	—	$100	999.00**
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DG	50-500/4.5-6.3 APO OS HSM (95ø)	#SI505004563C	#SI505004563N	#SI505004563P	#SI505004563SA	#SI505004563SM	$150	1,509.00**
DG	70-200/2.8 EX APO OS HSM (77ø)	#SI7020028CQ	#SI7020028NI	#SI7020028P	SI7020028SIQ	#SI7020028SOQ	$100	1,299.00**
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DG	70-300/4-5.6 APO Macro Super II (58ø)	#SI703004DGCA	#SI70300456AN	#SI703004DGPA	#SI703004DGSA	#SI703004DGMA	—	239.00
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DG	120-300/2.8 EX APO OS HSM (105ø)	#SI12030028C	#SI12030028N	#SI12030028P	#SI12030028SI	—	—	3,199.00
DG	120-400/4.5-5.6 APO OS HSM (77ø Rear)	#SI120400C	#SI120400N	#SI120400P	#SI120400S	#SI120400SQ	—	999.00
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DG	2x EX APO Tele-Converter	#SI2XDGCAF	#SI2XDGNAF	#SI2XDGPAF	#SI2XDGSA	#SI2XDGMAF	—	299.00
DG	EF-610 ST	#SIEF610STC	#SIEF610STN	#SIEF610STP	#SIEF610STSI	#SIEF610STS	$20	145.00**
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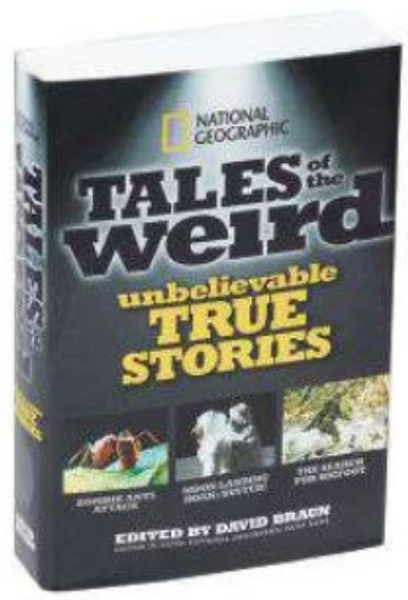

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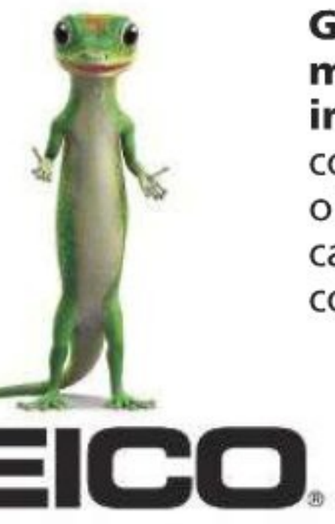

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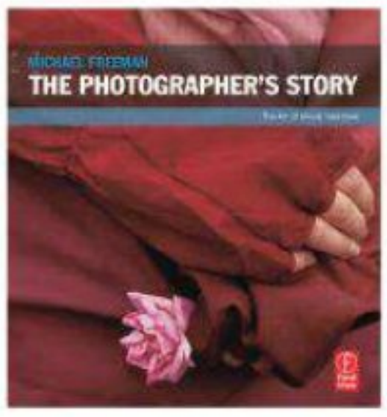

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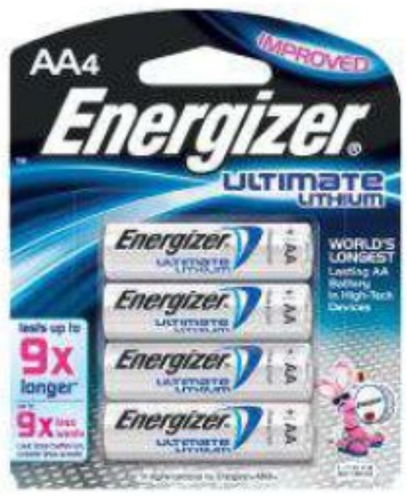

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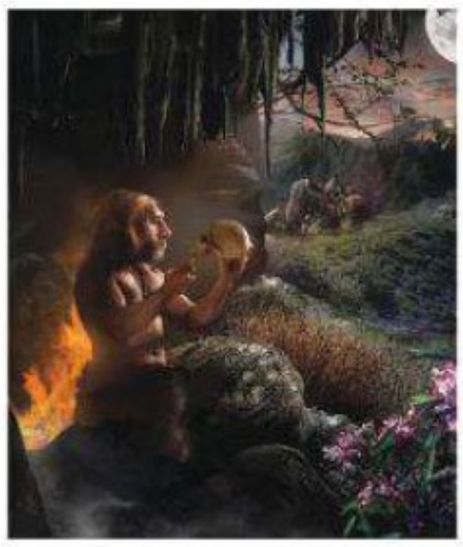

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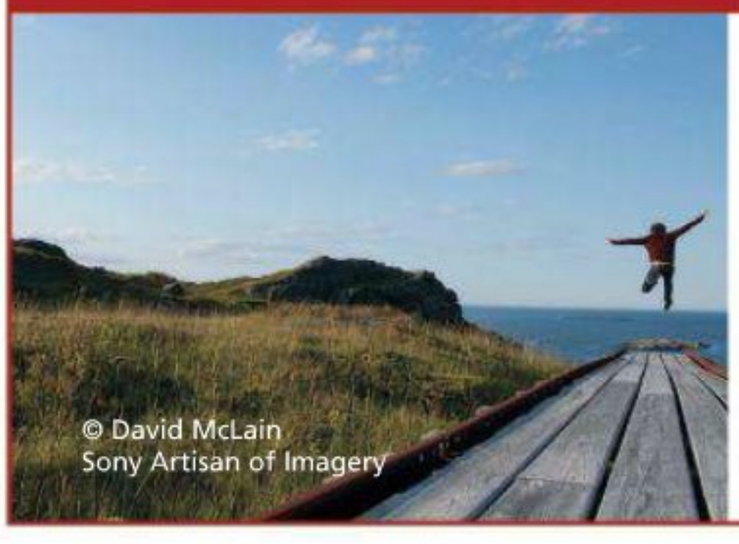

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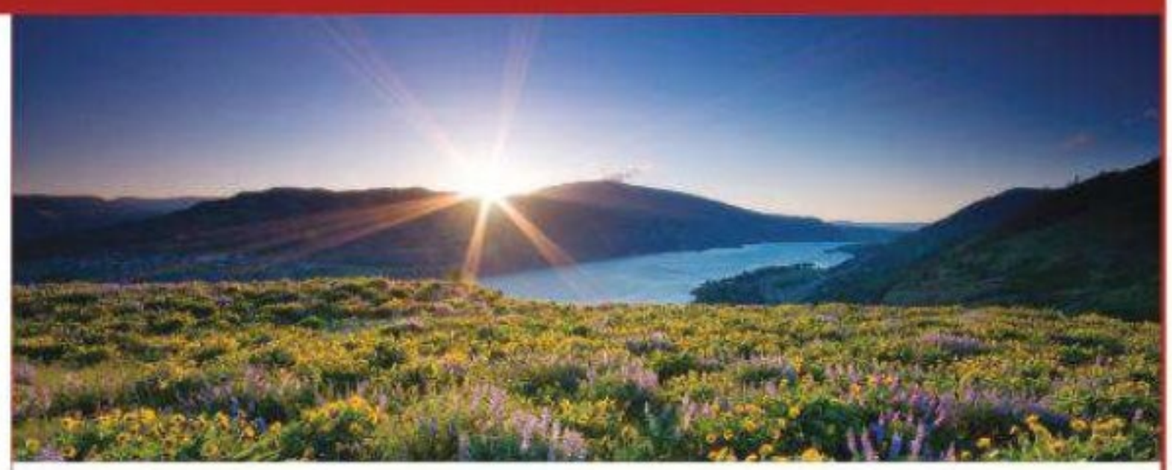

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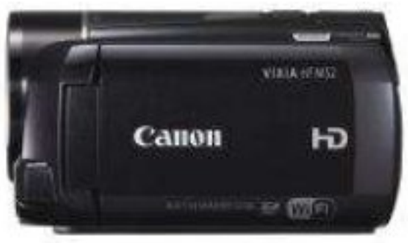

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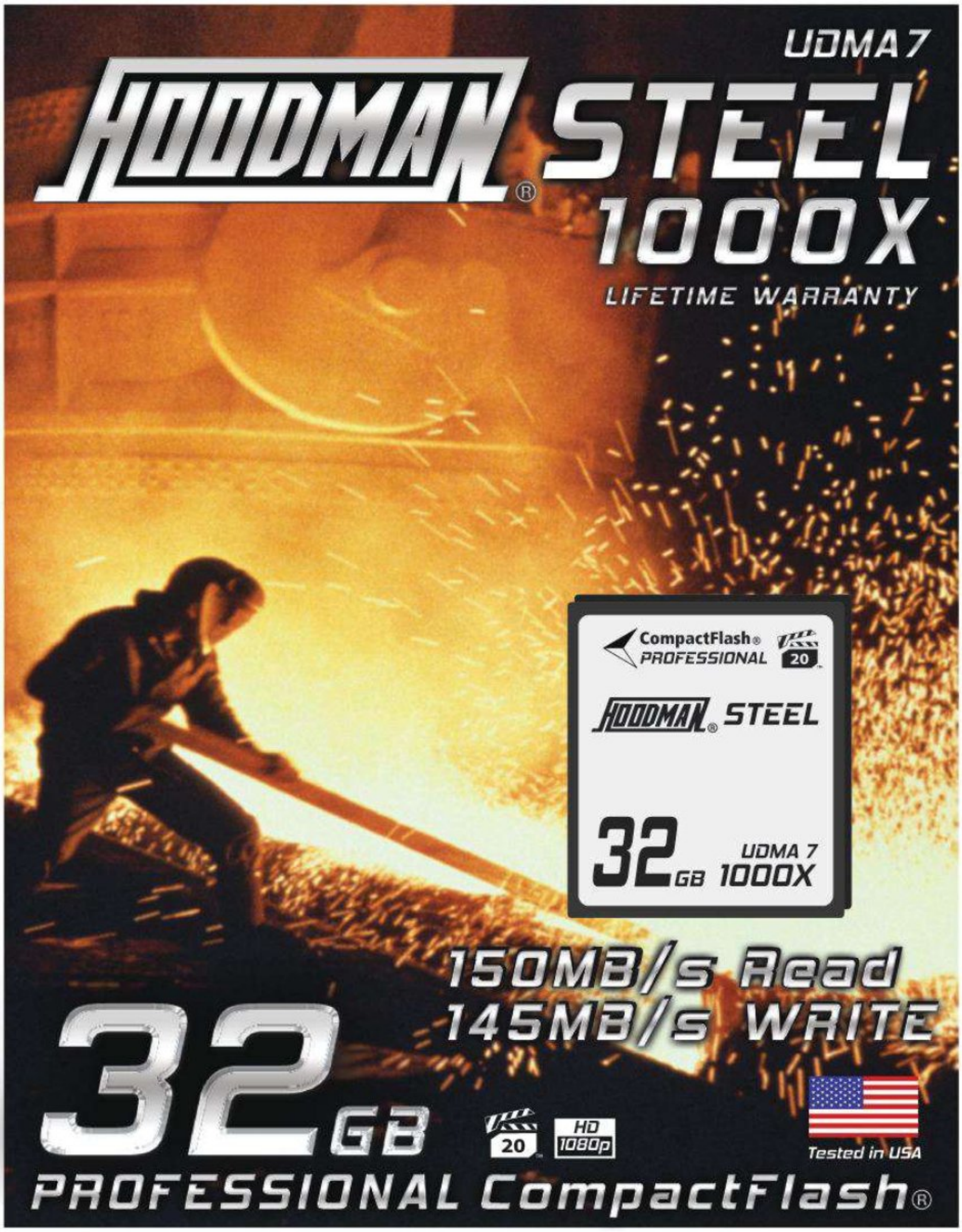

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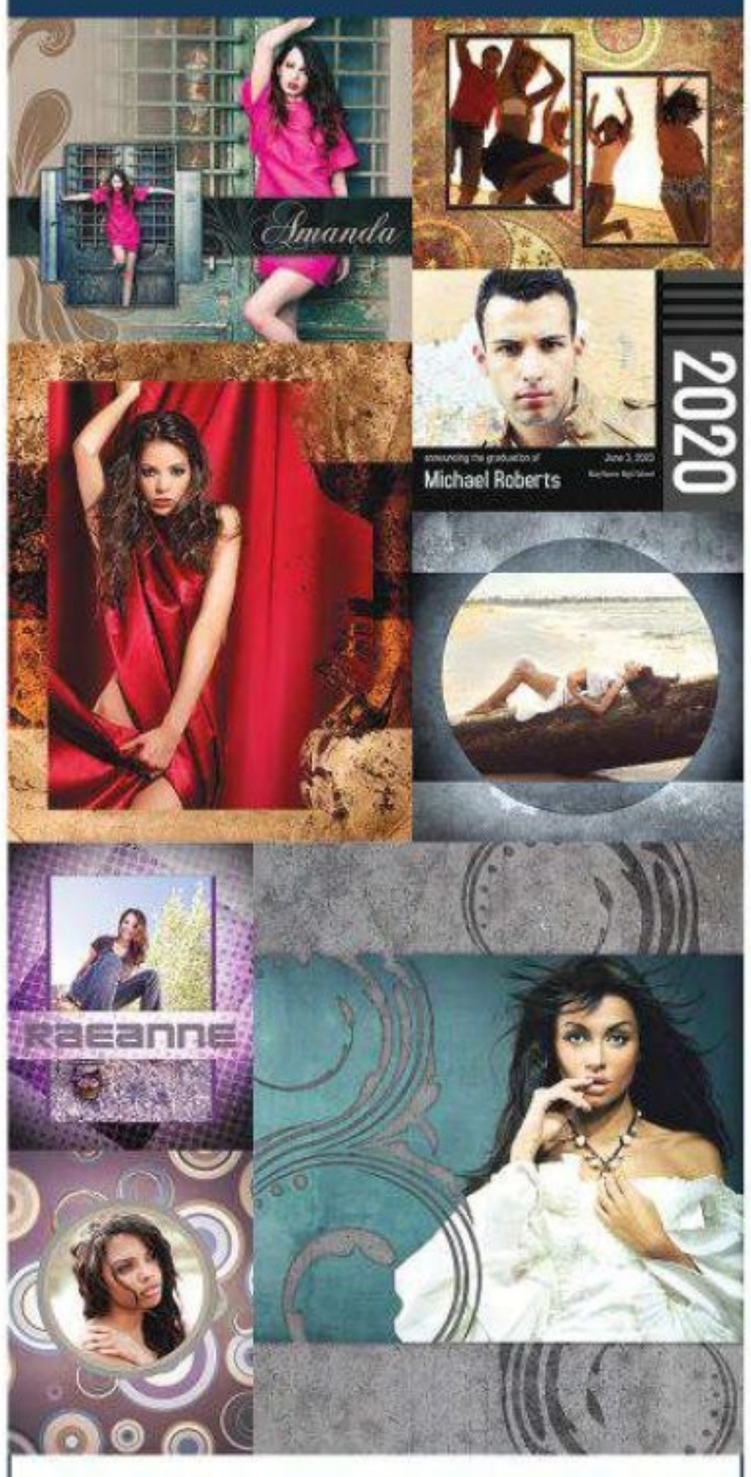

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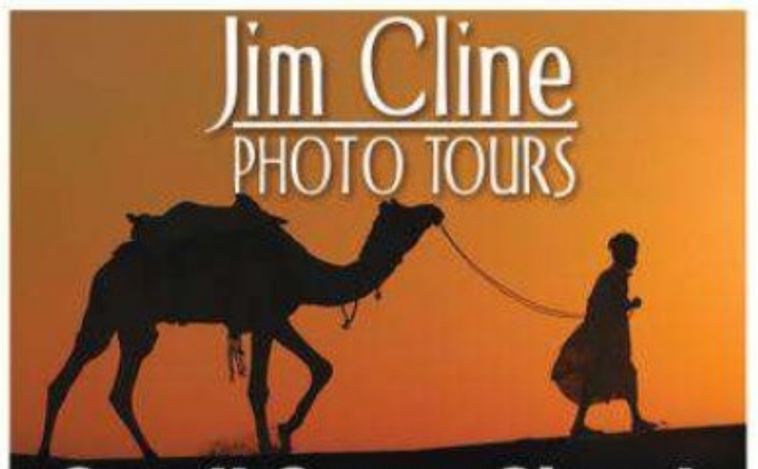

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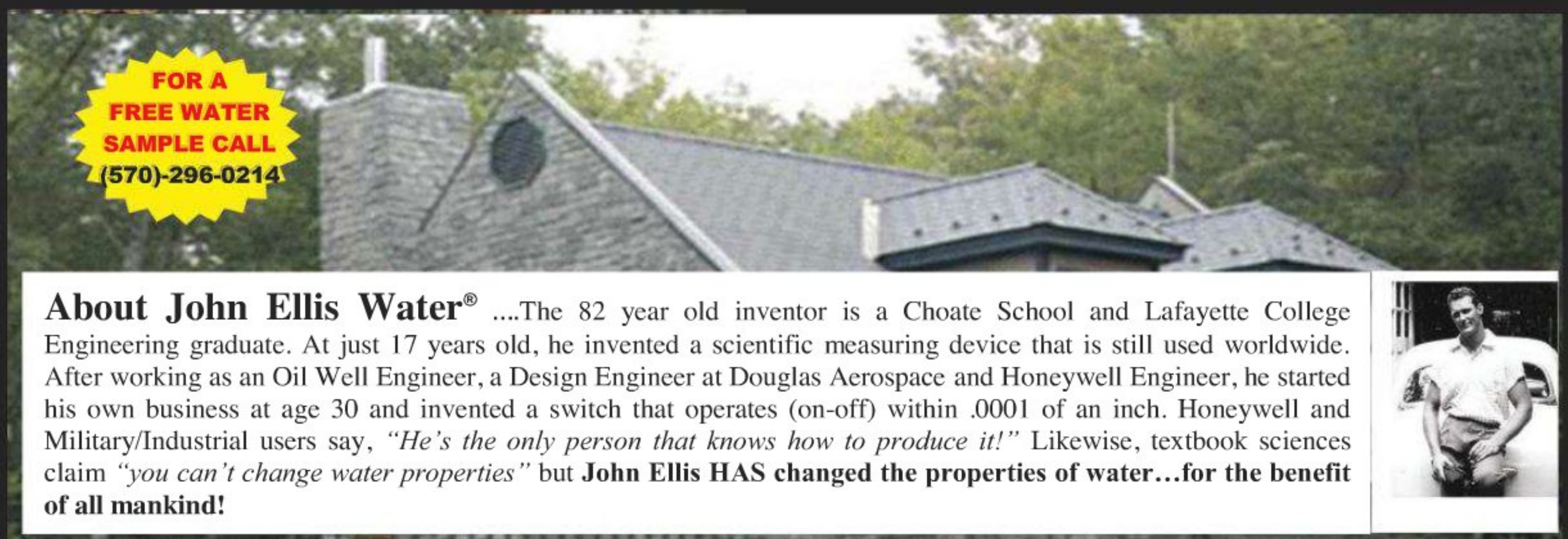

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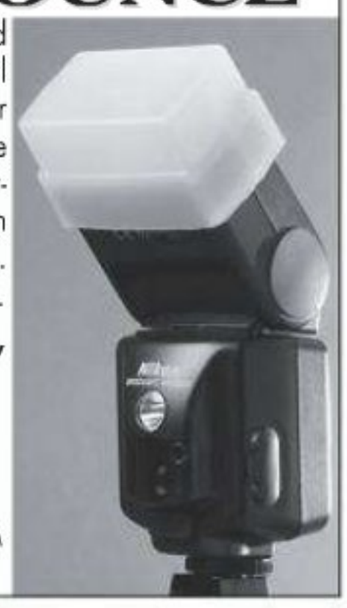

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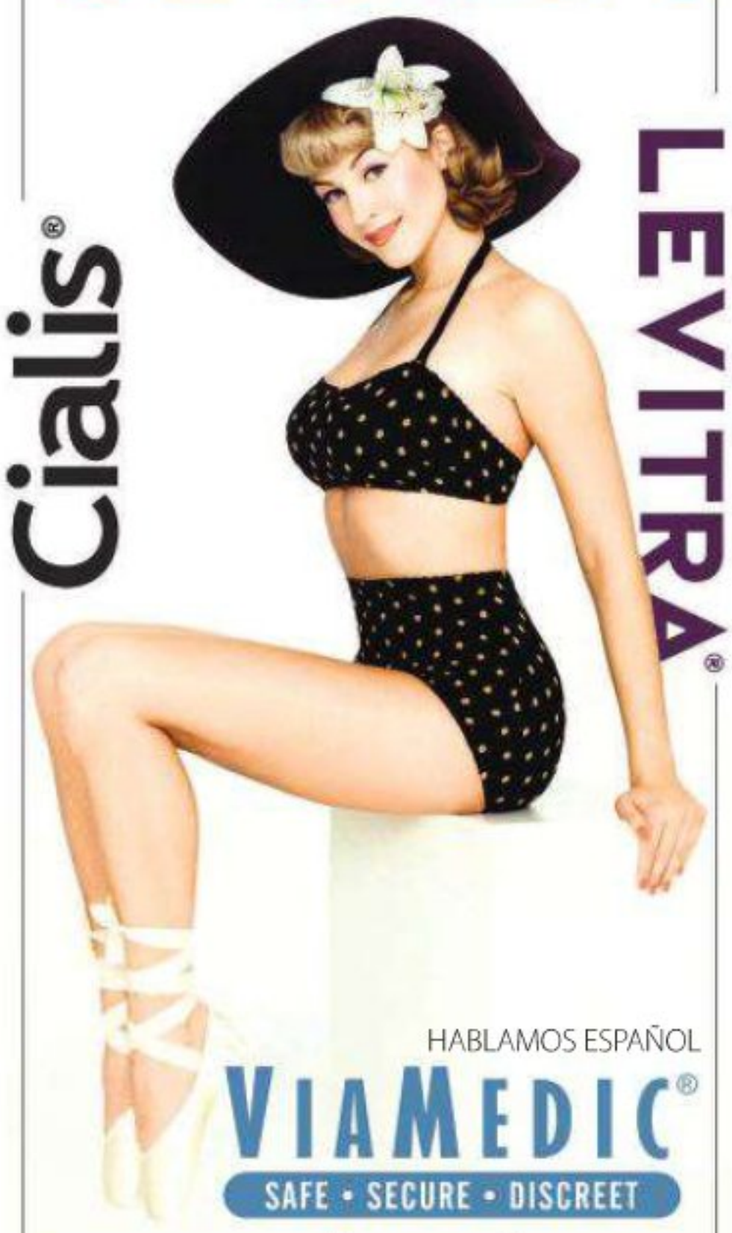

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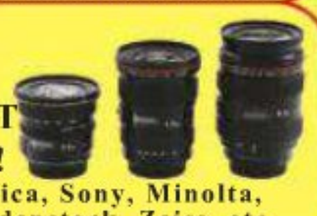

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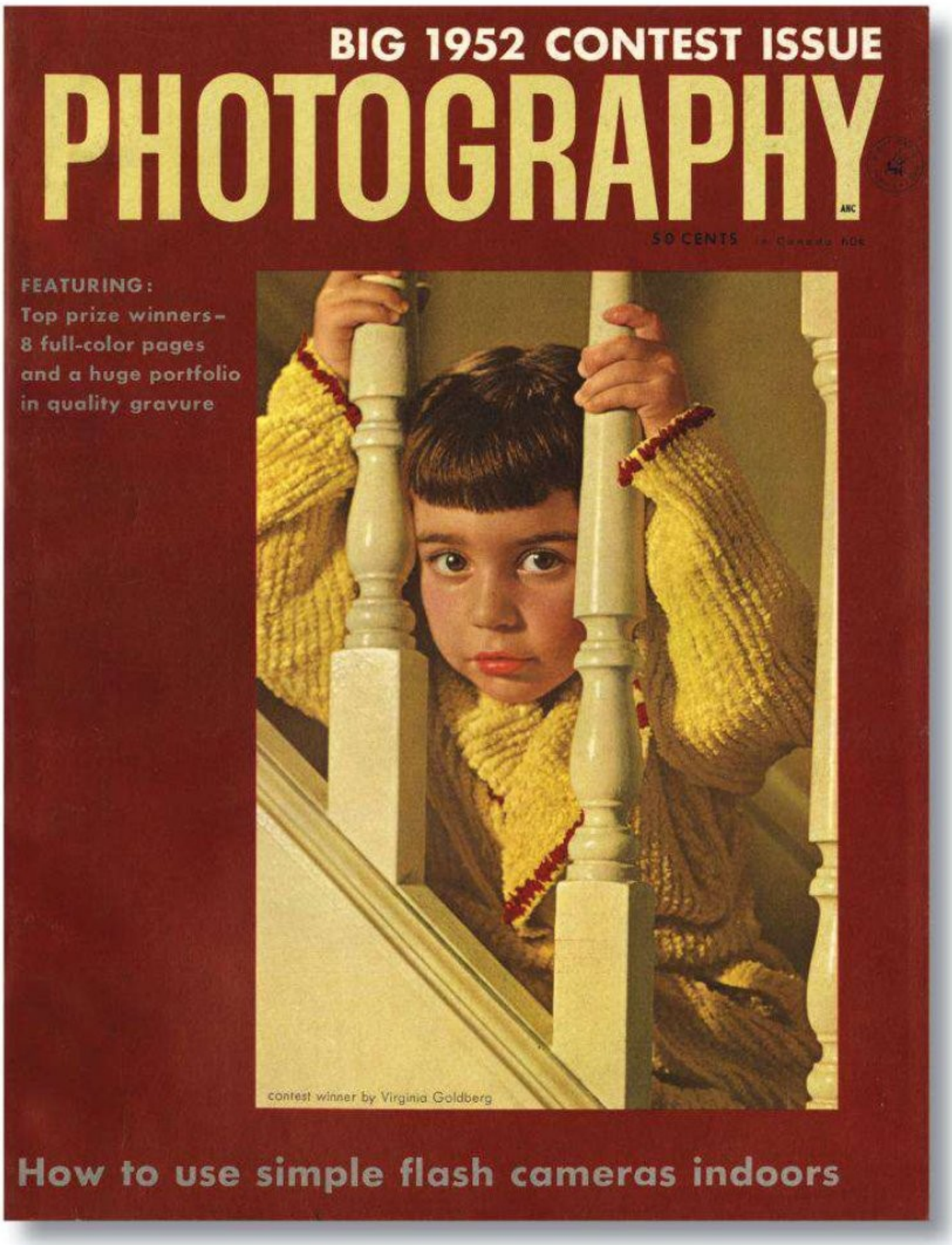


▲ Beginner's Luck

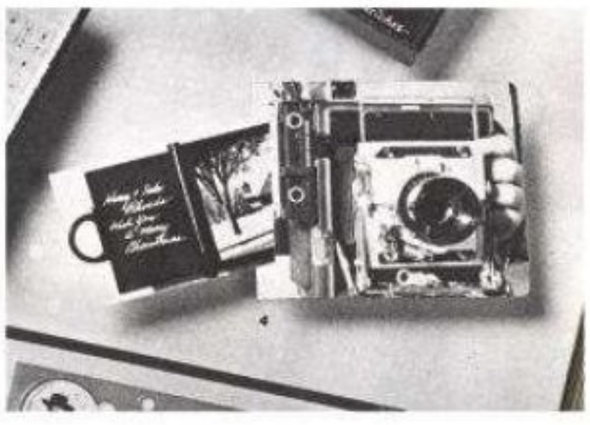
For Ohio amateur Virginia Goldberg, her first award from *Popular Photography* hit the jackpot—A $100 savings bond, plus her prize-winning picture on our contest issue cover. The subject is her three-year-old daughter Benita. Goldberg used a Leica IIIc with a 90mm f/4 Elmar lens and Kodachrome Type A Tungsten film. Three photofloods provided the lighting for an exposure of 1/10 sec at f/4.5.

60 YEARS AGO

Louis Walton Sipley profiled the Philadelphia Society of Photography (established 1862), the nation's oldest camera club.

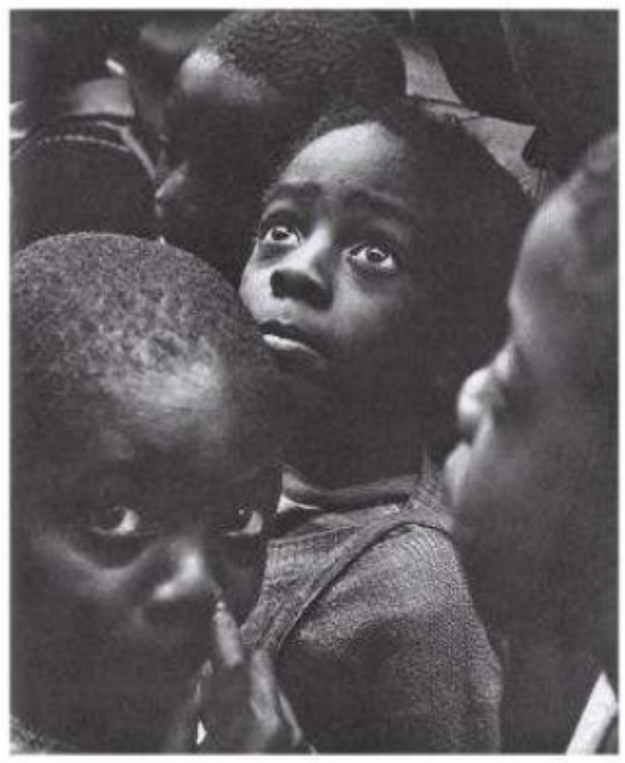
▼ Camera Greetings

What could be more photographic for a greeting card than a picture of your camera? Henry M. Rhoads, of Denver, CO, used his 4x5 Speed Graphic with the dark slide for his Christmas card, which was a winner in our 1951 Christmas Card contest.



▼ First Prize, B&W

"Boys" by Leon Levinstein of Brooklyn, NY, captured the top prize in the black-and-white category: a $2,000 savings bond, and a trophy. The picture was taken at a parade in Baltimore, MD, where this little boy was trying to see over the heads of the crowd in front of him. Levinstein used a Rolleiflex with a 75mm f/3.5 Zeiss Tessar lens and Super XX film. The exposure was 1/50 sec at f/5.6.



▼ Korean Casualty

Sergeant Frank D. Praytor, a combat cameraman with the First Marine Division, made this photo of a Marine wounded during a raid on Chinese positions in Korea. He described his photo as a "non-gory" combat photo, compared with many similar pictures loaded with bloody details. Praytor recorded not only the casualty, but also a Navy corpsman giving aid, and the Navy chaplain that assisted him. He used a Leica IIIf with a 50mm Summitar f/2 lens. The exposure, on Kodachrome Daylight film, was 1/60 sec at f/5.6.

—Harold Martin

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NIKON AF-S 24–85MM F/3.5–4.5G ED VR

CONTINUED FROM PAGE 100

(barrel at 24mm, pincushion at 50mm and 85mm), high by today's standards. Still, these numbers beat its predecessor by more than a factor of 2. (To compare, Canon's discontinued 24–85mm f/3.5–4.5 scored better for sharpness, but had off-the-charts Very Visible 2.9% barrel distortion at 24mm.)

The new Nikkor's vignetting control—falloff until f/5.6 at 24mm and 85mm, and none at 50mm—also handily beat the previous version. Its 1:3.63 maximum subject magnification was about the norm for kit lenses. So was VR: At 85mm, our testers averaged 2.5 stops of extra handheld shooting.

This versatile zoom is wide enough on full-frame bodies for group shots and tight interiors. It scales up to 36–128mm on Nikon's DX (APS-C) bodies for wildlife and stadium sports on the long end.

By kit lens standards, the price may seem high. But it costs nearly $1,300 less than Nikon's 24–70mm f/2.8, an arguably comparable lens that's also twice as heavy and offers no VR. So to us, $600 seems pretty reasonable. *—Julia Silber*

SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

24 MM

Size	5x7	8x10	11x14	16x20	20x24
3.5	96.1	95.0	92.2	86.7	80.2
4.0	96.2	95.0	92.3	87.0	80.8
5.6	96.4	95.3	92.8	87.9	82.2
8.0	96.4	95.3	92.7	87.7	81.8
11.0	96.4	95.3	92.7	87.8	82.1
16.0	96.0	94.8	92.0	86.6	80.2
22.0	95.3	93.8	90.3	83.6	75.5

50 MM

Size	5x7	8x10	11x14	16x20	20x24
4.5	96.6	95.5	93.2	89.2	84.9
5.6	96.5	95.4	92.9	88.7	84.0
8.0	96.5	95.3	92.8	88.5	83.7
11.0	96.5	95.4	92.9	88.7	84.0
16.0	96.0	94.8	92.0	87.1	81.6
22.0	95.2	93.6	90.2	83.7	76.1
29.0	94.5	92.9	88.9	81.1	71.7

85 MM

Size	5x7	8x10	11x14	16x20	20x24
4.5	95.8	94.3	91.1	84.9	77.5
5.6	95.7	94.4	91.2	85.1	77.8
8.0	95.9	94.6	91.6	85.8	79.0
11.0	95.9	94.6	91.6	86.0	79.4
16.0	95.3	93.8	90.4	83.7	75.7
22.0	95.0	93.5	89.9	82.9	74.4
29.0	94.7	93.1	89.2	81.5	72.2

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CONTINUED FROM PAGE 90

In the Field

The new Nikon was also very pleasant to use in everyday shooting. The grip, while not as lovingly sculpted as the one on the D800 and D4, still feels nice in the hand and has a groove on the inside for your fingertips. Plus, there's a ridge just below the shutter button that gives you leverage to tilt the camera.

Ample dedicated buttons give you access to most of the settings you're likely to want to change while shooting. Photographers stepping up from entry-level DSLRs might not be used to some controls, such as the AF button built into the AF switch on the front left of the camera, or the autobracketing and flash buttons above that switch. But once you start using the camera regularly, you will likely find those controls well placed and quite useful.

The one real gripe we have is the placement of the ISO button on the bottom left of the nice 3.2-inch 921,000-dot LCD. Nikon's higher-end cameras place this in the group of three buttons on the top left of the camera, while many Canon cameras place it just behind the shutter button. Either of those placements make it easy to change ISO while keeping your eye at the finder. We were, on more than one occasion, flummoxed by the odd location of the D600's ISO button. Worse still, you can't assign it to one of the function buttons.

As usual, Nikon's 3D Color Matrix Metering II served up excellent exposures even in some tough situations. We were happy to see up to +/–5 EV exposure compensation, but were baffled as to why autobracketing is limited to three frames.

Even more baffling: why the camera's automatic HDR function combines only two shots. It produced nice results in many situations, and lets you select 1, 2, or 3 EV for the exposure differential. But we're surprised that Nikon didn't step this up to three shots.

Burst shooters should like the D600's 5.5 frames-per-second continuous shooting, which allows for up to 57 full-sized, fine-quality JPEGs or up to 16 14-bit losslessly compressed RAW images before the buffer fills. In our field testing, the camera's 3D tracking AF did a fine job of keeping up with moving objects.

Video enthusiasts will likely get weak in the knees over the D600's ability to output an uncompressed HD stream to an external recorder from its HDMI jack. More casual video shooters should be plenty pleased with the quality of the video footage the D600 records to SD cards using Nikon's usual H.264 encoding. There's little in the way of artifacts and the footage we captured had well-saturated colors and was pleasingly sharp.

The Bottom Line

As we haven't yet tested Canon's EOS 6D, there's no good point of comparison for the D600. But given the images (both still and moving) that this camera can produce, the well-designed, weather-sealed body, and the vast array of lenses and accessories in the Nikon system, we say it's well worth the price.

Obviously, we'll have more to say once the Canon arrives, but for now, the Nikon D600 is the best full-frame bargain you can find. Nikon shooters looking to take their first step into full frame should not hesitate to do so. And Nikon-shooting pros looking to add a backup full-frame body have a wonderful option in the D600. This year's holiday shopping just got a little bit more interesting. ***—Philip Ryan***

The D600 makes it easy to capture time-lapse sequences with its built-in interval timer. You can build the sequence into a video on your own, or let the camera put together a silent time-lapse movie for you. You can set a delayed start time, too. Use the optional EP-5B ($50, street) AC adapter for extended shoots.

SPECIFICATIONS

IMAGING: 24.3MP effective, full-frame (FX) CMOS sensor captures images at 6016x4016 pixels with 14 bits/color in RAW mode.

STORAGE: Dual SD slots store JPEG, NEF RAW, and RAW + JPEG files.

BURST RATE: Full-sized JPEGs (Fine mode), up to 57 shots at 5.5 fps; RAW (14-bit), up to 16 shots at 5.5 fps using an SDHC UHS-I card.

AF SYSTEM: TTL phase detection with 39 selectable focus points (9 cross-type); single-shot and continuous AF with 3D predictive focus tracking. Tested sensitivity down to EV –1 (at ISO 100, f/1.4).

LIVE VIEW: TTL phase-detection or contrast-detection autofocus.

SHUTTER SPEEDS: 1/4000 to 30 sec, plus B (1/3-, or 1-EV increments); 150,000-cycle rating.

METERING: TTL metering with 2,016-pixel RGB sensor; Matrix (evaluative), centerweighted, spot (approx. 1.5% viewfinder). EV 0–20 (ISO 100).

ISO RANGE: Normal, ISO 100–6400 (in 1/3-EV increments); expanded, ISO 50–25,600.

VIDEO: Records at 1920x1080p at up to 30 fps; 1280x720p at up to 60 fps; in H.264 MPEG-4 MOV format; uncompressed video output available through HDMI jack; built-in mono microphone; stereo minijack input; maximum clip length: 29 min. 59 sec.

FLASH: Built-in pop-up; GN 39 (feet); hot shoe for dedicated i-TTL autoflash; flash sync to 1/200 sec.

VIEWFINDER: Fixed eye-level pentaprism.

LCD: 3.2-inch TFT with 921,000-dot resolution; 11-step brightness adjustment.

OUTPUT: USB 2.0, mini HDMI video, composite video, and analog audio.

BATTERY: Rechargeable EN-EL15 Li-ion, CIPA rating 900 shots (with optical viewfinder).

SIZE/WEIGHT: 5.6x4.4x3.2 in., 1.9 lb with a card and battery.

STREET PRICE: $2,100, body only.

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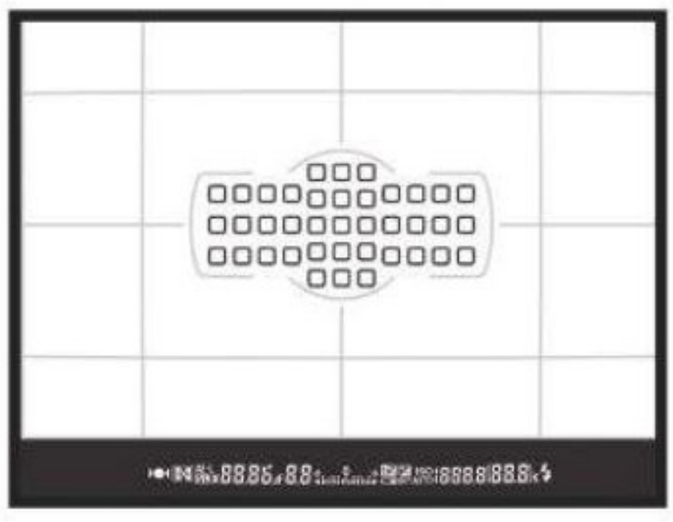

VIEWFINDER TEST: Accuracy, 100% (Excellent); Magnification, 0.7X (Very Good).

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The Flashpoint DG600 can be operated cord-free with an optional battery pack (far right), ideal when on-site electricity is unavailable.

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LIGHTEN UP LOCATION LIGHTING!

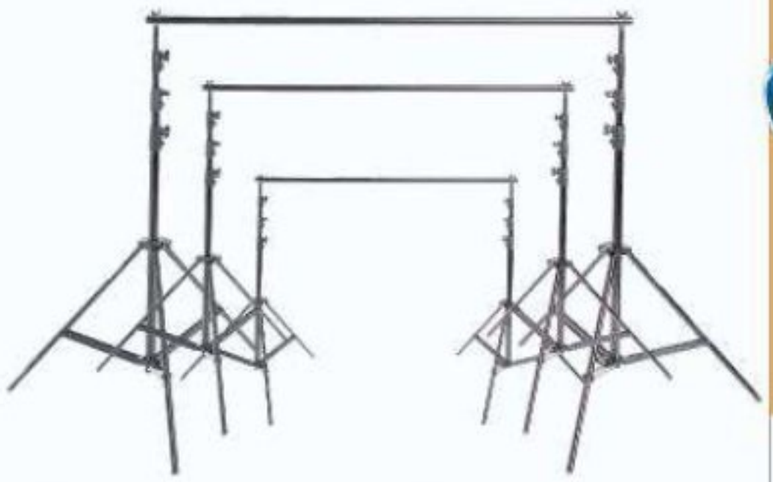
Bringing lights on location greatly expands a photographer's creative options, but their weight and bulk makes getting them there a struggle. Lessen your load with Adorama's new FLASHPOINT DG600 AC/DC Digital Monolight. It combines power source, controls, and flash head in a single unit—yet weighs just a few pounds and is *half* the size of comparable monolights.

Despite its compactness, our new strobe packs the power you need, with a pair of units steplessly delivering up to 600 watt-seconds of consistent 5600K light. What's more, a recycle time as fast as half a second and a flash duration as short as 1/1500 second mean you can shoot fast and with little risk of ghosting.

The FLASHPOINT DG600's big digital display makes settings easy to read, and its sturdy, fan-cooled housing features a secure, rubberized surface. Why pay more?

FLASHPOINT Easy-Shoot Solutions

Background Support System



The background stand comes with interlocking 4 section crossbar. and a handy carrying bag with compartments.

The top of the stand meets the crossbar there is a screw and wing nut to keep the crossbars secured to the stands.

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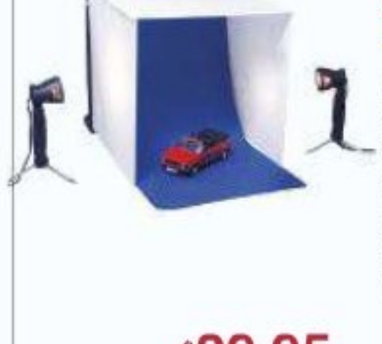

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TRIPOD REPORT

Supporting Role

Flashpoint tripods & heads

Why every photographer needs a good tripod. By Marvin Good

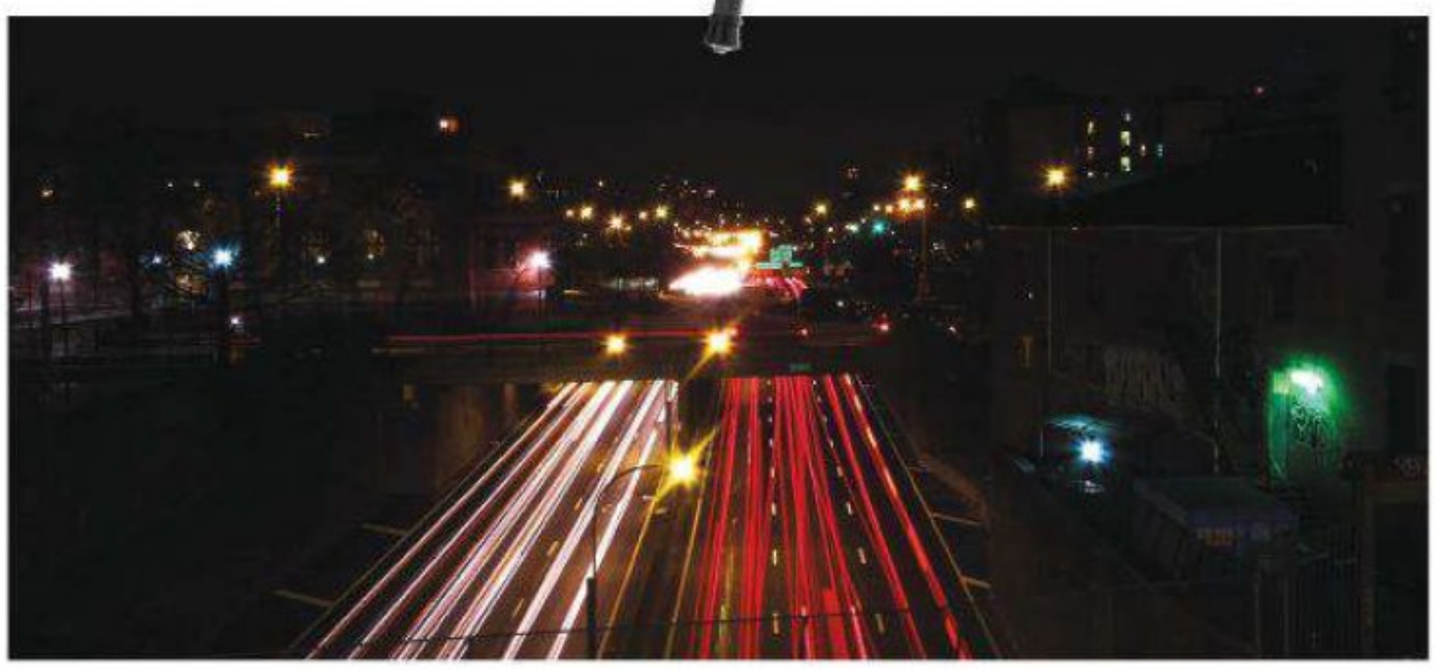
Right: Two of the top Flashpoint carbon-fiber tripods, the twist-lock Flashpoint F-1428N and the lever-lock Flashpoint F-2328N ($229.95), plus the muscular Flashpoint F-4 ball head ($114.95).

The most unappreciated, underused piece of equipment in all of photography is without a doubt the tripod. Even photographers who understand a tripod's value are often reluctant to spend money on one. It's money well spent—but you don't have to pay a lot to get a good tripod.

Flashpoint tripods, tripod heads, and monopods offer the features and quality of big-brand competitors at a fraction of the cost. The Flashpoint F-1428 tripod, for example, is made of 8X carbon fiber, which gives it high strength without excess weight. It can support a camera and lens weighing over 26 pounds, yet weighs less than six pounds itself. And while the F-1428 rises to six feet when you extend its center column—great for high angles and tall photographers—it collapses to two feet in length thanks to the four-section design of its rubberized twist-lock legs. (The column is reversible for low-level work.)

Prefer fast-action lever-locks? Take a look at the carbon-fiber Flashpoint F-2328. Like the F-1428, it supports over 26 pounds in camera and lens weight, features a built-in bubble level for easy alignment, yet weighs even less than its twist-lock sibling!

Before you moan and groan about the nuisance of carrying a tripod around, consider what it can do for you. First and foremost, it gives you tack-sharp pictures at slow shutter speeds that would cause blur if you were to handhold the camera. What about the in-camera image stabilization found in most of today's DSLRs? Sure, it gives you an edge—but since everyone's degree of steadiness is different, you never really know how slow you can safely go. And the damage isn't always obvious blur. Sometimes shaky hands just cause an irksome lack of crisp detail that you may have been blaming on improper focus. A tripod insures that this won't happen.



Photographer: Sandy Ramirez

One classic photographic effect that requires a good tripod is turning car lights into streaks with a long exposure, achieved here with a Flashpoint tripod.

A tripod is especially important when you're using a long lens, such as a telephoto for wildlife photography. That's because the longer a lens, the greater the chance of blurred results. This is why long-lens photographers set high shutter speeds for handheld shooting—but they're still often pushing their luck. A tripod is the best insurance that they'll come back with sharp shots. And as a side benefit, a tripod keeps the viewfinder image from jumping around the way it does with a handheld telephoto, letting you frame the subject more precisely.

Even at less extreme focal lengths, a tripod is an important compositional tool, providing precision and repeatability you can't get handheld. It means that bracketed exposures will all have the same framing. And it's essential for exact matching of frames with HDR imaging.

To learn more about which Flashpoint tripod is right for your kind of photography, visit the Flashpoint store at Adorama.com. (Just type "Flashpoint carbon" into the search field.) You'll find a tripod for every purpose, from the models mentioned here all the way down to ultra-light travel tripods, plus everything in between. You'll also find a complete line of Flashpoint tripod heads for these models, as well as Flashpoint monopods—single-legged supports that offer a compromise between stability and mobility. But that's a discussion for another time!

Flashpoint tripods and heads are available exclusively from ADORAMA .
To order, visit the Adorama store, *Adorama.com*, or call (800) 223-2500.

SCAN TO GET YOURS TODAY

CONTINUED FROM PAGE 68

the sun at sunrise and sunset, this appears as a band of pink gradient in the sky that can add a little more character to an image.

Creature Features

If any image of the Everglades could be considered iconic, it might be the dew-covered spider webs that dot the open prairies. To shoot them, position yourself so they are slightly backlit just after sunrise, and the sparkling dewdrops coupled with the soft warm light can create a stunning image.

As noted earlier, the dry season helps to concentrate wildlife. With a scarcity of fresh water, animals move close to any standing water, natural or manmade. Birds and other fish predators now have a well-stocked buffet that provides photographers a great opportunity to capture feeding interactions.

As winter progresses, many wading birds prepare to breed. Males get showy breeding plumage (check out the duds on the heron above), begin building nests, and seem to forget all the photographers pointing their lenses at them. Starting in late January, Anhinga Trail in the Everglades is a great place to witness breeding anhingas, and Wakodahatchee Wetlands in Palm Beach County usually has a few pairs of great blue herons.

In March, male alligators begin bellowing, a primeval-sounding rumble meant to prove they are the king of the ring and most worthy of a female's attention. Usually heard early in the morning, their guttural vibrations make the water dance over their backs—definitely a sight to see, and photograph! With a high concentration of reptiles in any body of water, territorial fights are bound to break out, so be ready for the action.

Deer are always a favorite subject, too, although they're not as common as in some other states. Big Cypress has a healthy population of them; Turner River Road is a great gravel drive to look for them out in mixed pineland and prairie. Big Pine Key is home to the endangered key deer, the smallest subspecies of white-tailed deer—adult males average only 80 pounds, and fawns are born the size of a cat.

Many of the key deer have been "tamed" by the tourists, but please treat them like any wild animal; do not feed them, despite their curiosity and begging.

For most wildlife, 400mm is the longest focal length you'll need, and you could even get by with a max of 300mm.

I also like to look for the smaller, less obvious wildlife. Land crabs, like the one seen on page 66, are found along the

CORAL COVE, JUPITER
Part of the Anastasia Formation. EOS 5D Mark II, 16–35mm lens; two-shot blend of 1/2 and 1/4 sec at f/16, ISO 100.

TRICOLORED HERON, EVERGLADES
EOS 20D with 100–400mm lens; 1/250 sec at f/5.6, ISO 400.

ALLIGATOR, EVERGLADES
A two-shot blend of 1/8 and 1/2 sec at f/8 with an EOS 50D and 10–22mm f/3.5–4.5 lens, ISO 100.

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coastlines. Blue as adults, juveniles are orange, brown, or purple, and can be quite vibrant after a molt. Liguus tree snails are found in the U.S only in Florida, and come in 60 different color varieties. Seen in the Everglades, Florida Keys, and Big Cypress, these brightly colored creatures feed on the lichens and algae of tree trunks and were once collected for their shells.

So even though Florida does not have those side-of-the-road grand scenics, it's still a fantastic place to visit for nature photographers. Pack those flip-flops and come create some images that will look nothing like those 10,000 or so shots you've already seen of Half Dome and Mesa Arch.

Photographer Paul Marcellini shoots all over Florida and all over the world. He offers private tours and photo workshops in the Everglades. See more of his work at paulmarcellini.com.

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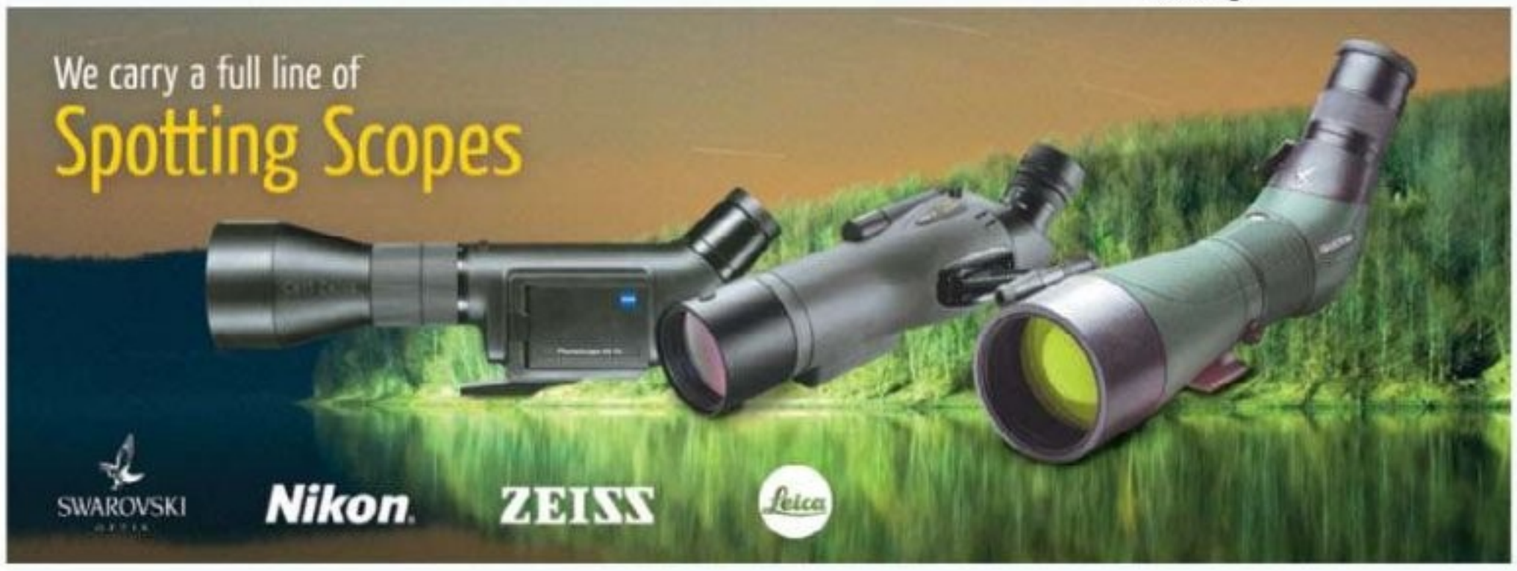

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SHARE THE JOY

CONTINUED FROM PAGE 84

Stumped for a concept? Try the news, suggests Phillips. "Often current events will suggest a topic, like hurricanes, global warming, or the mortgage crisis—all of which we've used," he says.

Ideally, the production of a holiday card is an ongoing project that lasts, in some form, all year long. Many of our pros are always on the lookout for humorous or colorful card concepts. Jeff Harris' "cookie" card (page 83) features the staff of his New York studio (jeffharrisphoto.com); its concept occurred to him while shopping. "In my Brooklyn neighborhood, I noticed some Obama cookies in a local bakery. I figured if the President could retain his dignity on a cookie, so could my crew."

Mike Belschner of the Indianapolis, IN, wedding studio bobbi+mike (bobbiandmike.com) agrees: "Throughout the year, we keep a list of things that made us laugh. When it's time, we look at it and decide what can be represented visually and in a holiday context."

Want to do a card this year? Because time is short, keep it simple. Edgar Artiga (artiga-

BOBBI+MIKE (WALL OF PHOTOS); KENT PHILLIPS (CHILDREN)

MAKE IT FUN **Mike Belschner, who with his wife Bobbi, turned this wall of awkward family photos into a holiday card says that with a carefree attitude "and a bottle of wine, making the card let us unwind." Kent Phillips made his tottering tot card by compositing two photos: one was just the wall; in the other Phillips supported the baby atop his siblings. In postproduction, he erased all trace of himself.**

photo.com) liked his dog Lola's portrait (page 84) for its ease of propping. "Planning was quick and simple—we had all the supplies we needed on hand—green seamless, lights, a bow, and Lola. A box of Milkbone treats and we were ready to go."

Phillips agrees. "Remember, because family, friends, and clients come to expect it, you may end up doing cards every year. Do whatever you can to keep the process simple rather than something to dread each November!"

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BACKSTORY

Fresh Face

KLAUS ENRIQUE

Klaus Enrique breathes life into produce

FOR AN EARLIER project, I worked on capturing human body parts within natural objects—a dirty hand covered by tissue, for example. Photographing a human eye buried behind leaves, I realized that the shape of the leaves made up a human face. Excited, I thought that this was a great new idea, until I discovered that Italian painter Giuseppe Arcimbolo had already done similar work in the 1500s, using fruit and vegetables.

Working with that idea as a tribute, I recreated his portrait "Vertumnus," of Rudolf II. It took four days to position. Some produce wilts within minutes, so I made runs to the grocery store to replace objects as I arranged them. Arcimbolo could resize fruit in his paintings, but I had to replace the pear-nose with a sweet potato.

I've since made a series of similar portraits of more recent historic figures I admire, like Gandhi.

—As told to Lori Fredrickson

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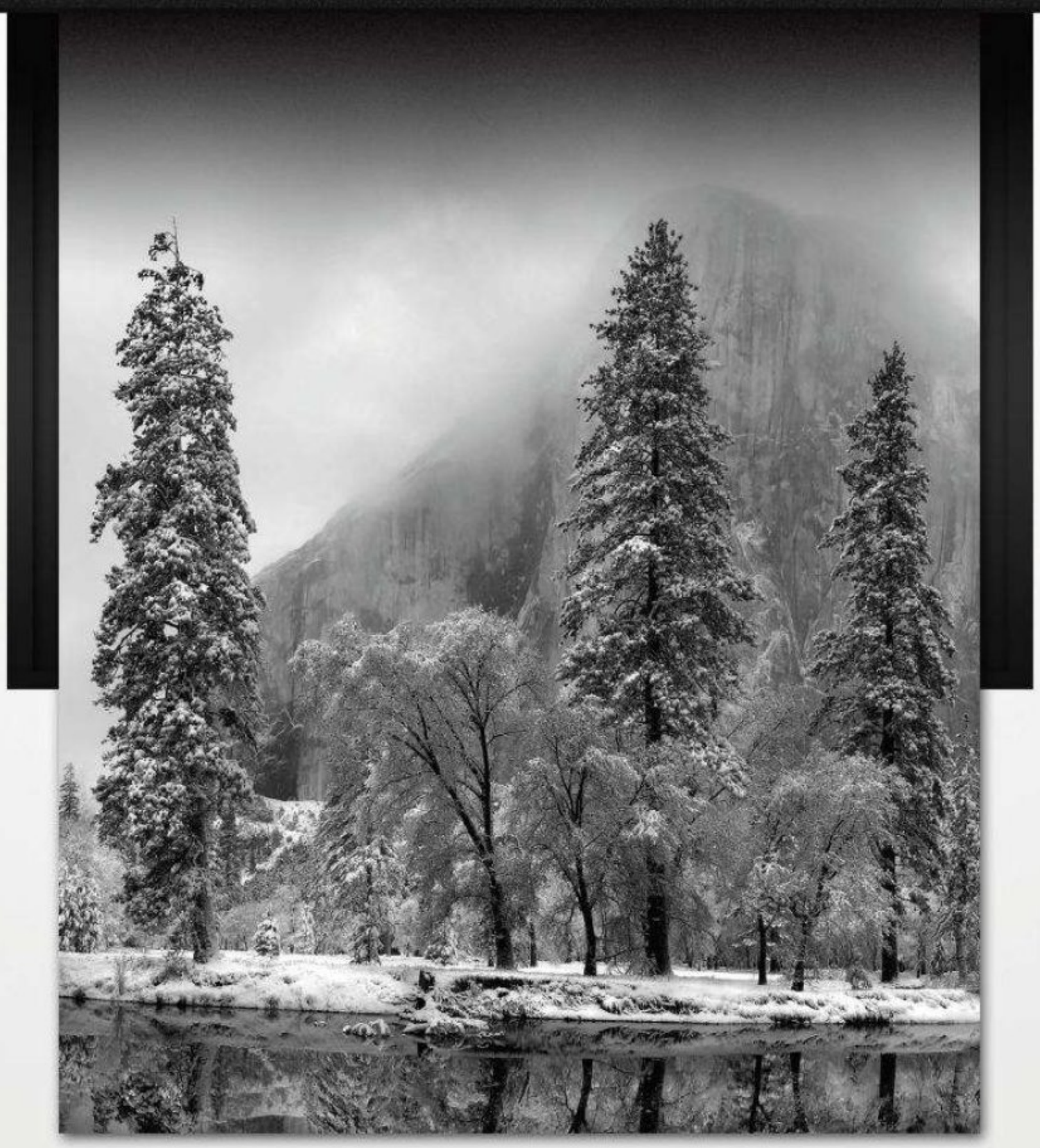

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